

# Sprague®

## CERAMIC EMI/RFI FILTERS



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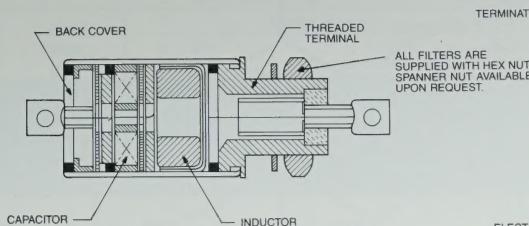
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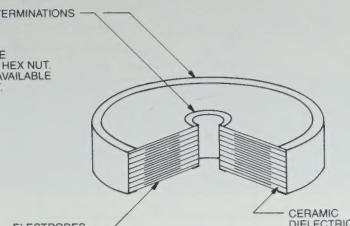
# INTRODUCTION TO FEEDTHROUGH EMI FILTERS

This catalog describes standard Sprague subminiature feedthrough EMI filters. All the filters in this product line use multilayer ceramic (MLC) capacitors that are coaxially configured. This MONOLYTIC® ceramic construction was pioneered by Sprague Electric Company, which holds basic patents in this technology.

All MLC capacitors consist of conducting electrodes (plates) separated by a barium titanate dielectric. An MLC capacitor may contain as many as 50 such layers. The coaxial or feedthrough version of the MLC capacitor used in these filters have all positive electrode terminations at the center of the device, and all negative or ground terminations at the outer edge. The capacitors, in this configuration, are capable of providing almost theoretical insertion loss performance when installed in metal cases.



Dwg No A 14, 288



Dwg No A 14, 289

Most of the MLC capacitors used in the filters in this catalog exhibit temperature/capacitance characteristics at least as stable as EIA designation X7R, which limits the capacity change to a maximum of  $\pm 15\%$  over the temperature range of  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ , referenced to  $+25^{\circ}\text{C}$ .

All inductors used in the filters described in this catalog are wound on insulated toroidal cores using  $200^{\circ}\text{C}$  rated magnet wire. Most core materials are molybdenum permalloy based. Some designs contain ferrite materials. Performance criteria include the effects of core saturation.

Miscellaneous materials used in these filters are of the highest grade and quality available. The effects of time and temperature on all materials have been matched to yield the highest quality filter component available on the market today.

## Add the New MIL-F-28861 From Sprague

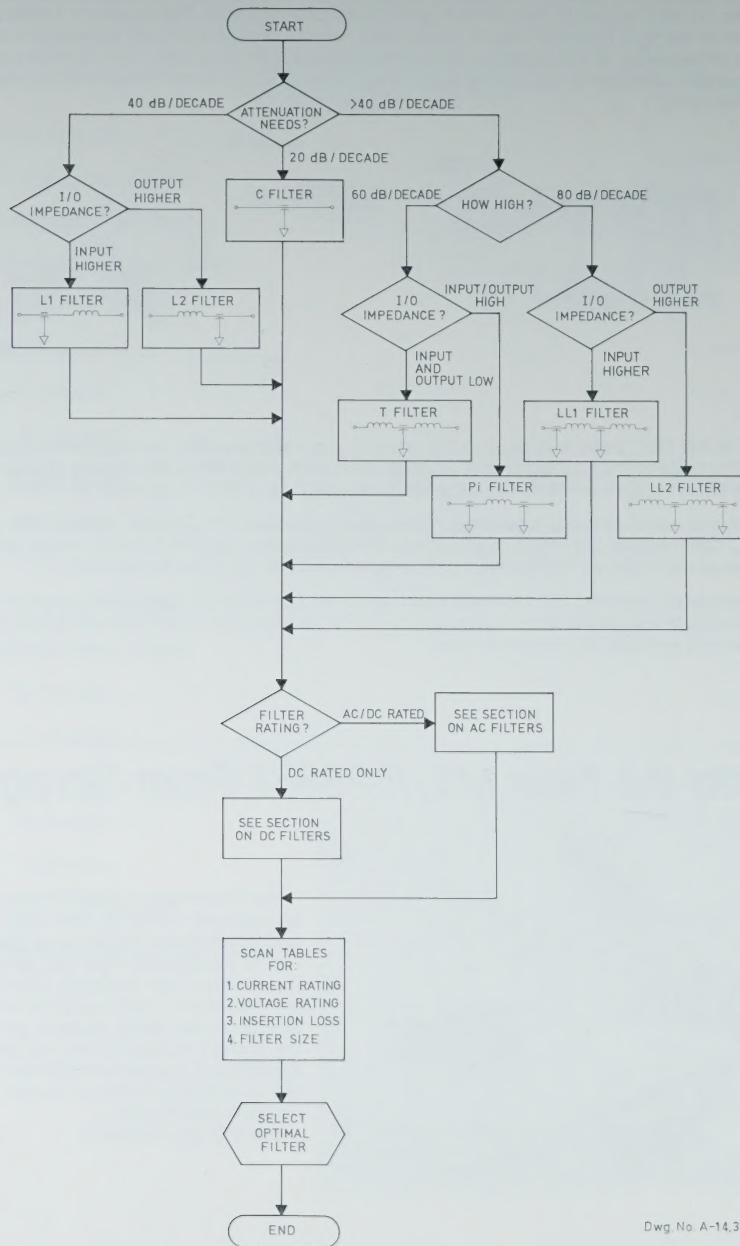


Your first choice in EMI/RFI filters is now an approved source of both MIL-F-15733 and MIL-F-28861. The Sprague Filter Division is equipped to meet the demand for the military's high reliability subminiature ceramic filters. With sourcing available throughout the world, Sprague offers you the highest quality in the industry. Call Sprague and experience first hand the benefits of working with the top supplier of subminiature ceramic filters.

Call 413-664-4441/4431.

# FILTER SELECTION

This catalog is designed to simplify filter selection, taking the user from basic needs of voltage, current, and circuit style through the process of specifying a filter part number. The flow chart below illustrates typical selection procedure.



Dwg. No. A-14,301

# CIRCUIT CONFIGURATIONS

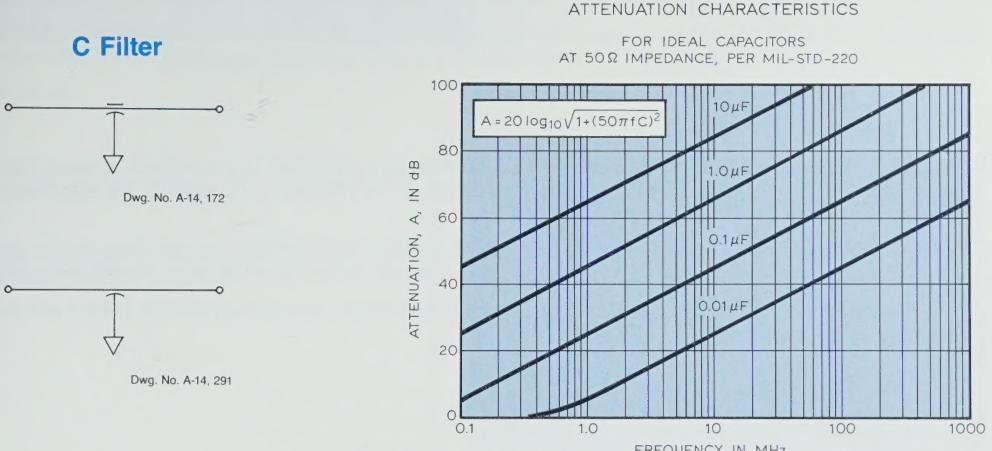
Subminiature filters are passive devices, and their effects are bidirectional. They are all low-pass brute force devices, passing power line frequencies with very low losses while attenuating energy at higher frequencies. They do not differentiate between interference or other electrical energy generated inside or outside a device. They are equally effective in reducing electrical noise going to or coming from a device.

The table below gives operating current and voltage ranges for each of the standard filter configurations shown in this catalog.

Filter Type	AC/DC-Rated Filters				DC-Rated Filters			
	Current Range (A)	Voltage Range			Current Range (A)	Voltage Range		
		at + 85°C (VDC)	at + 125°C (VDC)	(VAC)		at + 85°C (VDC)	at + 125°C (VDC)	
C	5.0–15	175–600	100–600	50–230	5.0–15	100–500	50–250	
L	0.05–20	100–450	50–300	26–230	0.001–20	100–600	50–300	
Pi	0.01–15	150–600	150–300	125–240	0.001–10	100–300	50–200	
T	0.06–10	250–500	150–300	125–230	0.06–15	100–300	50–250	
LL	0.1–3.0	250	150	125	0.1–3.0	100	50	

**Feedthrough Capacitor**—A single element, a capacitor from line to ground, with a through wire connecting the input to output. It has attenuation characteristics that increase at 20 dB per decade from its cutoff frequency to at least that frequency where it exhibits a minimum attenuation of 60 dB. It maintains this attenuation at higher frequencies.

A feedthrough capacitor filter is usually the best choice for filtering lines that exhibit very high impedance. Its schematic symbol and its attenuation characteristics are shown below. A feedthrough capacitor, in this catalog, will be referred to as a **C** filter.



# CIRCUIT CONFIGURATIONS

**L Circuit**—Two elements: a feedthrough capacitor from line to ground, and an inductor connected in series with it between the input and output terminals. The capacitive element can be placed on either the line or load side of the filter, making it either a capacitive or inductive input. Its attenuation increases at 40 dB per decade from its cutoff frequency to at least that frequency where it exhibits a minimum attenuation of 70 dB. It maintains this level at higher frequencies.

L-circuit filters are usually the best choices when the line and load impedances exhibit large differences in impedance. The inductive element is best placed so that it faces the lower impedance.

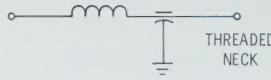
Schematic symbols and typical attenuation characteristics are shown below. They are commonly referred to as L filters. **L1** indicates that the inductive element is on the end with the threaded mounting neck. **L2** indicates that the capacitive element is on the end with the threaded mounting neck.

## L-Circuit Filters



Dwg. No. A-14, 299

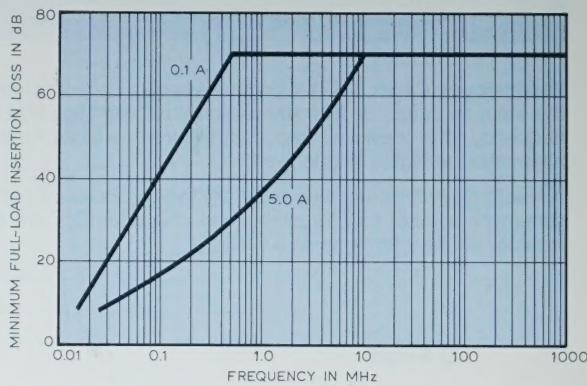
**L1**



Dwg. No. A-14, 300

**L2**

TYPICAL ATTENUATION CHARACTERISTICS



Dwg. No. A-14, 292

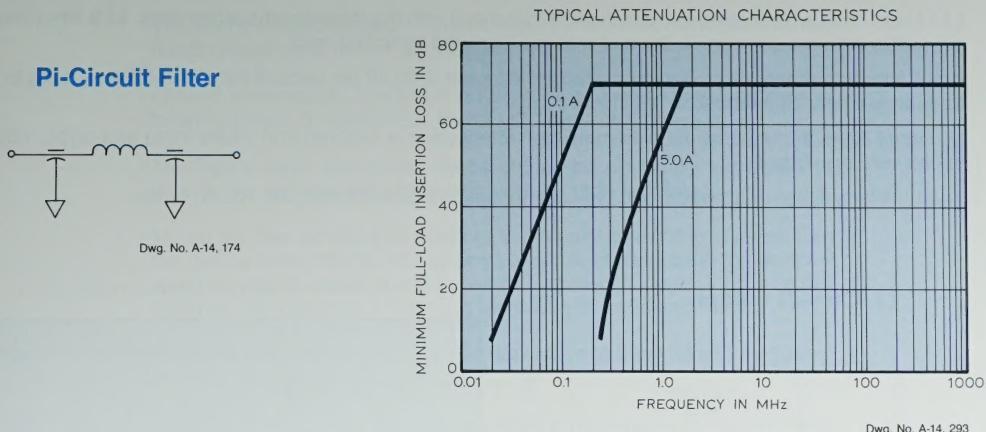
**Pi Circuit**—A three-section filter consisting of two feedthrough capacitors to ground with a series inductor between them. The Pi filter is usually symmetrical, as are all the Pi filters in this catalog, but circumstances sometimes warrant use of asymmetrical Pi circuits.

A Pi filter has attenuation characteristics that increase at 60 dB per decade from its cutoff frequency to at least that frequency where it exhibits a minimum attenuation of 80 dB. It maintains this level at higher frequencies.

A Pi filter is usually the best choice when high levels of attenuation are required and where input and output impedances are similar values.

# CIRCUIT CONFIGURATIONS

The Pi filter's schematic symbol and typical attenuation characteristics are shown below:



**T Circuit**—A three-section filter consisting of two series-connected inductors between the input and output terminals, with a feedthrough capacitor between them from line to ground. The **T** filter is usually symmetrical (identical inductive elements), but circumstances sometimes warrant use of asymmetrical circuits.

A T filter has attenuation characteristics that increase at 60 dB from its cutoff frequency to at least that frequency where it exhibits a minimum attenuation of 60 dB.

A T circuit filter is usually the best choice where both input and output impedances are low. The schematic symbol and typical attenuation characteristics are shown below:



# CIRCUIT CONFIGURATIONS

**LL Circuit**—Four-section filter consisting of two feedthrough capacitors connected between line and ground with two interspersed inductors connected in series with them between the input and output terminals. The **LL** filter is usually made with identical capacitor and inductor elements.

**LL1** filters have an inductive element closest to the end with the threaded mounting neck. **LL2** filters have a capacitive element adjacent to the end with the threaded mounting neck.

An LL filter has attenuation characteristics that increase at 80 dB per decade from its cutoff frequency to that frequency where its attenuation is at least 80 dB.

LL circuit filters are used where extremely high attenuation is required and where input and output impedances vary significantly.

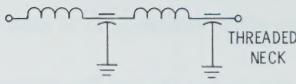
The LL filter's schematic symbol and typical attenuation characteristics are shown below:

## LL-Circuit Filters



Dwg. No. A-14, 296

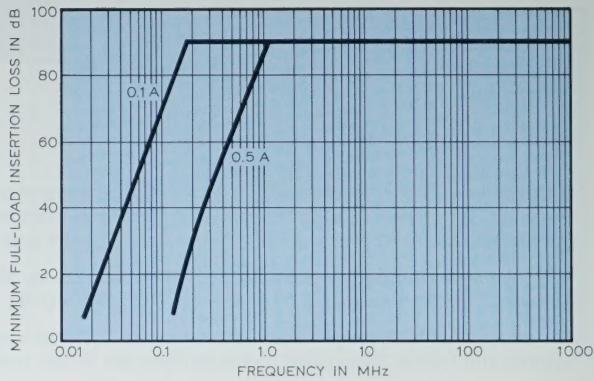
**LL1**



Dwg. No. A-14, 297

**LL2**

TYPICAL ATTENUATION CHARACTERISTICS



Dwg. No. A-14, 295

# APPLICATION NOTES AND INSTALLATION GUIDELINES

When installing an EMI filter for any purpose, observe these basic rules:

- The filter's metal case must make direct, low-resistance contact with the metal chassis, cabinet, or groundplane.
- Ground connections should be physically short and should exhibit the lowest possible rf impedance. Never use wires for rf grounds.
- The filter's input and output leads should be physically separated to provide the greatest amount of electrical isolation possible.
- Mount the filter as close as possible to the point power lines egress from the device being filtered. At any point of penetration through the device's electrical shield, make sure the shield's continuity is maintained. In every instance, the preferred installation technique is "bulkhead" mount.
- The most economical filter selection will always be that one with the fewest internal elements.
- Feedthrough capacitor filters are usually the best choice for use with very high impedance lines.
- L-circuit filters, or LL filters, are usually the best choice when the difference between line and load impedances is large. The inductive element is best placed so that it faces the lower impedance.
- Pi-circuit filters are usually the best choice when high levels of attenuation are required and input and output impedances are similar.
- T-circuit filters are usually the best choice when both the input and output impedances are low.
- LL-circuit filters should only be used when extremely high attenuation is required and when input and output impedances vary significantly.
- Maximum installation torque is as follows:

Thread Size	Maximum Torque
1/4-28	48 in/ounces
5/16-24	64 in/ounces

# ABBREVIATIONS AND TERMS

**Attenuation** — The decrease in amplitude of electricity (voltage, current, or power) in the stop-band of a filter, referenced to the amplitude without the filter. It is generally measured at a standard  $50\Omega$  impedance and expressed in decibels (dB).

**Conducted Interference** — Undesirable electrical energy emitted by a device. The interference appears on power, signal, or control leads of the device and disrupts or degrades its performance or that of another device. Limits of conducted interference levels are generally defined by law or regulation.

**Conducted Susceptibility** — A measure of the interference signal level (voltage or current) on power, signal or control leads required to cause an undesirable response or to degrade performance of a device.

**Decade** — A frequency ratio of 10 to 1.

**EMI** — Electromagnetic interference or unwanted electrical energy in any form.

**Filter** — To restrict or control electrical energy at a frequency or over a frequency range, or a device for doing so.

**Frequency Subdivisions**

VLF (Very Low) . . . . .	3 kHz to 30 kHz
LF (Low) . . . . .	30 kHz to 300 kHz
MF (Medium) . . . . .	300 kHz to 3 MHz
HF (High) . . . . .	3 MHz to 30 MHz
VHF (Very High) . . . . .	30 MHz to 300 MHz
UHF (Ultra High) . . . . .	300 MHz to 3 GHz
SHF (Super High) . . . . .	3 GHz to 30 GHz
EHF (Extremely High) . . . . .	30 GHz to 300 GHz

**Insertion Loss** — The decrease in amplitude of electricity (voltage, current, or power) in the pass-band of a filter, referenced to the amplitude without the filter. It is generally measured at a standard  $50\Omega$  impedance and expressed in decibels (dB).

**Insulation Resistance** — Or IR, usually the value of the dc resistance from a conducting element to the case of a filter, extrapolated from measurement of dc current flow driven by a pure and precise dc voltage applied between the filter's terminals and its case.

**Leakage Current** — Or leakage, usually the algebraic sum of reactive currents flowing through the filter's capacitors to ground.

**MIL-B-5087** — U.S. Government document that specifies bonding, electrical and lightning protection for aerospace systems.

**MIL-E-6051** — U.S. Government document that specifies electromagnetic compatibility requirements for systems.

**MIL-F-15733** — U.S. Government document for general specification of filters and capacitors for control of radio-frequency interference.

# ABBREVIATIONS AND TERMS

- MIL-F-28861**
  - U.S. Government document for general specification of filters and capacitors for suppression of radio-frequency and electromagnetic interference.
- MIL-HDBK-235 (NAVY)**
  - U.S. Government document that specifies electromagnetic (radiated) environment considerations for design and procurement of electrical and electronic equipment.
- MIL-HDBK-237**
  - U.S. Government document that specifies electromagnetic compatibility program requirements.
- MIL-STD-202**
  - U.S. Government document that specifies test methods for electronic and electrical components.
- MIL-STD-220**
  - U.S. Government document that specifies methods of insertion loss measurement for radio-frequency filters.
- MIL-STD-461**
  - U.S. Government document that specifies electromagnetic interference requirements for equipment.
- MIL-STD-462**
  - U.S. Government document that specifies measurement of electromagnetic interference characteristics.
- MIL-STD-469**
  - U.S. Government document that specifies radar engineering design requirements for electromagnetic compatibility.
- Noise**
  - Generic term for undesirable electrical energy.
- Octave**
  - A frequency ratio of 2 to 1.
- Radhaz**
  - Hazard presented by electromagnetic radiation to fuels, electronic hardware, ordnance, or personnel.
- Radiated Interference**
  - Undesirable electrical energy that radiates from a device or its leads, coupled for measurement purposes to a standard test antenna and receiver. Limits of radiated interference levels are generally defined by law or regulation.
- Radiated Susceptibility**
  - A measure of radiated interference level required to cause an undesirable response or to degrade the performance of a device.
- Radiation**
  - The emission of energy in the form of electromagnetic waves.
- RFI**
  - Radio-frequency interference, an older, somewhat restrictive term generally used interchangeably with "EMI."
- RI**
  - Radio interference, an even older and more restrictive term for "EMI."

# CERAMIC EMI/RFI FILTERS

All filters in this catalog are capable of passing the following tests without physical damage or electrical degradation, except as noted. The following documents are applicable to this specification: MIL-STD-202, MIL-STD-220, MIL-F-15733, and MIL-F-28861.

## Test Procedures for Military Devices

Test	Quality Level/Sample Requirement			Test Method (MIL-STD-202 unless otherwise specified)
	MIL-F-15733	MIL-F-28861 Class B	Class S	
Thermal Shock	100% (Note 1)	100%	100%	Method 107, Condition A (-55°C to +125°C, 5 cycles)
Voltage Conditioning	100% (Note 2)	100%	100%	Per MIL-F-28861, or 168 hours at 1.2× ac voltage rating or at 2× dc rating (See Note 3)
Dielectric Withstanding Voltage	1% AQL	100%	100%	Method 301 (2.5× dc voltage rating)
Insulation Resistance at +25°C	1% AQL	100%	100%	Method 302 (At rated dc voltage)
Capacitance to Ground	1% AQL	100%	100%	Method 305 (1.2 Vrms, maximum, at f=1 kHz)
Insertion Loss	1% AQL	100%	100%	MIL-STD-220
DC Resistance	1% AQL	100%	100%	Method 303
AC Voltage Drop	1% AQL	None	None	MIL-F-15733, Para. 4.6.8
X-Ray	(Note 4)	100%	100%	Method 209
Case Seal	1% AQL	100%	100%	Method 112 MIL-F-15733, Condition A, or MIL-F-28861, Conditions A and C
Visual and Mechanical	1% AQL	1% AQL	1% AQL	Per detailed specification
Temperature Rise	4% AQL	None	None	MIL-F-15733, Para. 4.6.4
Current Overload	4% AQL	None	None	MIL-F-15733, Para. 4.6.10

### NOTES:

1. Sprague performs thermal shock tests on all ceramic filters as part of the production process.
2. Sprague conducts +125°C burn-in tests on all Military QPL filters for a minimum of 48 hours at 1.5× dc voltage rating.
3. Includes +125°C test for insulation resistance during last 50 hours (for MIL-F-28861, at 0.2% PDA).
4. Except where selected specification sheets require 100% X-Ray.

# TESTING

## Periodic Tests for Military Devices

Periodic Test	Inspection Interval/Allowed Failures			Test Method (MIL-STD-202 unless otherwise specified)
	MIL-F-15733	MIL-F-28861 Class B	Class S	
AC Voltage Drop	Not required	30 days, 1 in 10	30 days, 0 in 5	MIL-F-28861, Para. 4.6.6
Voltage at Temperature, Capacitance Limits	Not required	30 days, 1 in 10	30 days, 0 in 5	MIL-F-28861, para. 4.6.10
Insertion Loss at Temperature Extremes (Note 1)	6 months, 1 in 4	30 days, 1 in 10	30 days, 0 in 5	MIL-F-15733, Para. 4.6.5 MIL-F-28861, Para. 4.6.9
Operation at Reduced Barometric Pressure (Note 1)	6 months, 1 in 4	30 days, 1 in 10	30 days, 0 in 5	Method 105 MIL-F-15733 (50,000 ft. simulation) MIL-F-28861 (100,000 ft. simulation)
Salt Spray (Corrosion) (Note 1)	6 months, 1 in 4	90 days, 1 in 5	90 days, 0 in 5	Method 101 MIL-F-15733, Condition B MIL-F-28861, Condition A
Temperature Rise	Not required	30 days, 1 in 10	30 days, 0 in 5	MIL-F-28861, Para. 4.6.11
Current Overload	Not required	30 days, 1 in 10	30 days, 0 in 5	MIL-F-28861, Para. 4.6.14
Thermal Shock and Immersion (Note 2)	6 months 1 of 4	30 days, 1 in 10	30 days, 0 in 5	Method 107, Condition A, Method 104, Condition A
Resistance to Soldering Heat (Note 2)	6 months 1 of 4	90 days, 1 in 5	90 days, 0 in 5	Method 210, Condition B
Resistance to Solvents (Note 2)	6 months 1 of 4	90 days, 1 in 5	90 days, 0 in 5	Method 210, Condition B
Terminal Strength (Note 2)	6 months 1 of 4	30 days, 1 in 5	30 days, 0 in 5	Method 211, Condition A (5 lbs.)
Solderability	90 days, 1 in 5	90 days, 1 in 5	90 days, 0 in 5	Method 208
Life Test	90 days, 1 in 10	90 days, 1 in 10	90 days, 0 in 22	Method 108 MIL-F-15733, 250 hours MIL-F-28861, 1000 hours
Mechanical Shock	6 months, 1 in 4	6 months, 1 in 10	6 months, 0 in 5	Method 204 MIL-F-15733, Condition K, 30 Gs MIL-F-28861, B, Condition I, 100 Gs MIL-F-28861, S, Condition F, 1500 Gs
High-Frequency Vibration	6 months, 1 in 4	6 months, 1 in 10	6 months, 0 in 5	Method 204 MIL-F-15733, Condition B, 15 Gs MIL-F-28861, Condition E, 50 Gs
Moisture Resistance	6 months, 1 in 4	6 months, 1 in 10	6 months, 0 in 5	Method 106
Destructive Physical Analysis	Not required	Not required	90 days	MIL-F-28861, Appendix D, 2 pieces

### NOTES:

1. MIL-F-15733 allows one failure in four as a result of three tests: Insertion Loss, Barometric Pressure, Salt Spray.
2. MIL-F-15733 allows one failure in four as a result of four tests: Thermal Shock/Immersion, Resistance to Soldering Heat, Resistance to Solvents, Terminal Strength.

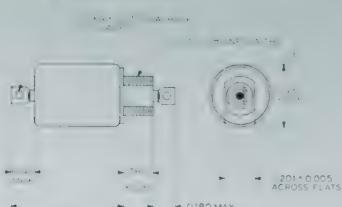
DC Rated

# CERAMIC EMI-RFI FILTERS

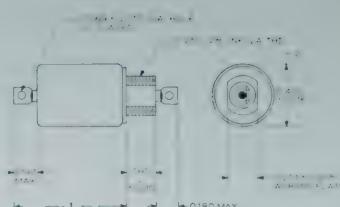
**C** 20dB / DECADE



Dwg. No. A-14.172



Dwg. No. A-14.206

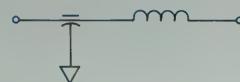


Dwg. No. A-14.207

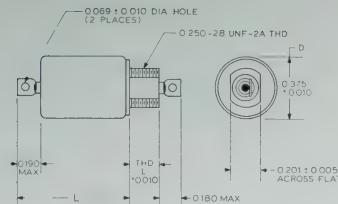
Current Rating (A)	DC Voltage Rating		D (in.)	Max. L (in.)	Thd. L (in.)	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at +25°C per MIL-STD-220								Sprague Part Number
	@85°C (V)	@125°C (V)						30 KHz (dB)	75 KHz (dB)	100 KHz (dB)	150 KHz (dB)	1 MHz (dB)	10 MHz (dB)	1 GHz (dB)		
7.0	100	50	0.400	0.440	0.187	0.75	0.01	8.0	14	16	20	37	50	60		7JX2503
7.0	100	50	0.400	0.440	0.187	0.75	0.01	10	18	20	24	40	55	60		7JX2502
7.0	100	50	0.400	0.440	0.187	0.25	0.01	—	7.0	10	13	30	50	60		7JX2501
7.0	100	50	0.400	0.440	0.312	0.75	0.01	8.0	14	16	20	37	50	60		7JX2103
7.0	100	50	0.400	0.440	0.312	0.75	0.01	10	18	20	24	40	55	70		7JX2102
7.0	100	50	0.400	0.440	0.312	0.25	0.01	—	8.0	12	15	30	50	60		7JX2101
7.0	250	150	0.400	0.440	0.187	0.25	0.01	5.0	12	14	17	32	50	60		7JX2505
7.0	250	150	0.400	0.440	0.312	0.25	0.01	—	7.0	10	13	30	50	60		7JX2105
7.0	300	200	0.400	0.440	0.312	0.15	0.01	—	—	—	6.0	21	40	60		7JX2104
10	100	50	0.375	0.550	0.187	1.5	0.004	15	22	26	30	43	60	70		10JX2569
15	100	50	0.375	0.350	0.187	0.5	0.004	7.0	15	17	21	37	47	70		15JX2541A
15	100	50	0.375	0.370	0.187	1.5	0.004	15	24	27	30	46	60	70		15JX2531
15	100	50	0.400	0.370	0.187	1.5	0.004	15	24	27	30	46	60	70		15JX2529
15	100	50	0.400	0.440	0.312	1.5	0.004	15	24	27	30	46	60	70		15JX2151
15	100	50	0.375	0.690	0.312	3.0	0.004	25	32	35	38	53	67	70		15JX2111
15	175	100	0.400	0.580	0.312	1.0	0.004	14	22	24	28	44	60	70		15JX2124
15	175	100	0.400	0.580	0.187	1.0	0.004	11	18	21	24	41	49	70		15JX2587
15	250	150	0.400	0.780	0.312	0.25	0.004	—	8.0	12	15	30	50	70		15JX3119
15	250	150	0.400	0.370	0.187	0.25	0.004	—	10	13	16	31	50	60		15JX2588

## CERAMIC EMI-RFI FILTERS

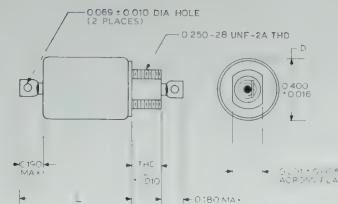
L1 40dB/DECADE



Dwg. No. A-14,176



Dwg. No. A-14.206



Dwg. No. A-14.207

Current Rating (A)	DC Voltage Rating		D (in.)	Max. L (in.)	Thd. L (in.)	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at +25°C per MIL-STD-220								Sprague Part Number
	@85°C (V)	@125°C (V)						30 kHz (dB)	75 kHz (dB)	100 kHz (dB)	150 kHz (dB)	1 MHz (dB)	10 MHz (dB)	1 GHz (dB)		
0.1	100	50	0.400	0.630	0.312	0.25	1.65	9.0	23	29	39	70	70	70	70	1JX2206
0.1	100	50	0.400	0.630	0.312	0.75	1.7	20	35	41	48	70	70	70	70	1JX2203
0.1	100	50	0.400	0.630	0.187	0.75	1.7	20	35	41	48	70	70	70	70	1JX2603
0.1	100	50	0.375	0.730	0.312	1.5	2.23	26	43	48	54	80	80	80	80	1JX6221A
0.1	100	50	0.375	0.730	0.187	1.5	2.23	26	43	48	54	80	80	80	80	1JX6201A
0.1	200	100	0.400	0.630	0.312	0.25	1.7	11	26	32	39	60	60	60	60	1JX2205
0.1	200	100	0.400	0.630	0.187	0.25	1.7	11	26	32	39	60	60	60	60	1JX2605
0.1	200	100	0.400	0.630	0.187	0.0012	0.7	—	—	—	4.0	22	52	70	70	1JX6408A
0.1	300	150	0.400	0.630	0.312	0.15	1.65	6.0	20	24	33	60	60	60	60	1JX2204
0.15	100	50	0.375	0.740	0.312	1.5	1.75	24	39	45	48	70	70	70	70	1JX2252E
0.15	100	50	0.400	0.760	0.312	1.5	1.5	25	40	46	51	70	70	70	70	1JX2252C
0.15	100	50	0.375	0.740	0.312	1.5	1.35	24	39	44	51	80	80	80	80	1JX6063A
0.15	100	50	0.375	0.740	0.187	1.5	1.35	8.0	15	18	22	50	70	70	70	1JX6061A
0.25	175	100	0.400	0.740	0.187	0.5	0.75	—	25	29	37	70	80	80	80	1JX6065A
0.3	100	50	0.400	0.630	0.312	0.75	0.7	15	31	35	42	70	70	70	70	1JX2213
0.3	100	50	0.400	0.630	0.187	0.75	0.75	15	31	35	42	70	70	70	70	1JX2613
0.3	200	100	0.400	0.630	0.312	0.25	0.7	6.0	22	25	32	60	60	60	60	1JX2215
0.3	200	100	0.400	0.630	0.187	0.25	0.75	6.0	22	25	32	60	60	60	60	1JX2615
0.45	100	50	0.375	0.760	0.312	1.5	0.7	16	34	37	42	70	70	70	70	1JX2255E
0.45	100	50	0.400	0.770	0.187	1.5	0.45	20	33	39	45	70	70	70	70	1JX6085A
0.45	100	50	0.375	0.740	0.312	1.5	0.7	18	33	35	44	76	80	80	80	1JX6064A
0.45	100	50	0.375	0.740	0.187	1.5	0.7	18	33	35	44	76	80	80	80	1JX6062A
0.5	100	50	0.400	0.630	0.312	0.75	0.35	12	25	29	36	69	70	70	70	1JX2223
0.5	100	50	0.400	0.630	0.187	0.75	0.35	12	25	29	36	69	70	70	70	1JX2623
0.5	150	100	0.400	0.800	0.187	0.5	0.5	11	24	31	37	70	80	80	80	1JX6077A
0.5	200	100	0.400	0.630	0.312	0.25	0.35	3.0	15	20	26	59	60	60	60	1JX2225
0.5	200	100	0.400	0.630	0.187	0.25	0.35	3.0	15	20	26	59	60	60	60	1JX2625
0.5	200	150	0.400	0.750	0.187	0.25	0.5	—	16	24	28	60	70	70	70	1JX6081A
1.0	100	50	0.400	0.630	0.312	0.75	0.14	11	18	21	26	55	70	70	70	1JX2233
1.0	100	50	0.400	0.630	0.187	0.75	0.14	11	18	21	26	55	70	70	70	1JX2633
1.0	100	50	0.400	0.570	0.187	1.5	0.2	15	24	30	36	65	70	70	70	1JX6130B
1.0	100	50	0.400	0.630	0.187	1.5	0.15	15	24	29	34	64	70	70	70	1JX6094A
1.0	100	50	0.400	0.800	0.187	0.75	0.3	—	24	53	66	68	70	70	70	1JX6015A

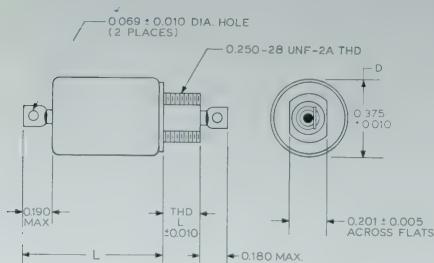
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## DC Rated

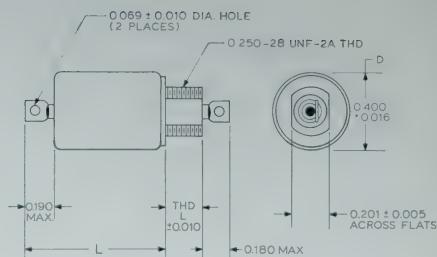
# CERAMIC EMI-RFI FILTERS

**L1** 40dB / DECADE

Dwg. No. A-14,176



Dwg. No. A-14,206



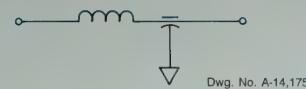
Dwg. No. A-14,207

Current Rating (A)	DC Voltage Rating		D (in.)	Max. L (in.)	Thd. L (in.)	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at + 25°C per MIL-STD-220							Sprague Part Number
	@85°C (V)	@125°C (V)						30 kHz (dB)	75 kHz (dB)	100 kHz (dB)	150 kHz (dB)	1 MHz (dB)	10 MHz (dB)	1 GHz (dB)	
1.0	150	100	0.400	0.800	0.187	0.5	0.24	8.0	16	23	28	61	70	80	1JX6078A
1.0	175	100	0.400	0.770	0.187	0.5	0.14	—	—	—	24	54	80	80	1JX6066A
1.0	200	100	0.400	0.630	0.312	0.25	0.14	3.0	9.0	12	16	46	60	60	1JX2235
1.0	200	100	0.400	0.630	0.187	0.25	0.14	3.0	9.0	12	16	46	60	60	1JX2635
1.0	250	150	0.400	0.750	0.187	0.25	0.24	—	12	14	20	52	80	80	1JX6082A
1.0	300	150	0.400	0.630	0.187	0.15	0.135	—	5.0	8.0	11	43	60	60	1JX2634
2.0	100	50	0.400	0.630	0.312	0.75	0.06	10	15	20	24	48	70	70	2JX2243
2.0	100	50	0.400	0.630	0.187	0.75	0.06	10	15	20	24	48	70	70	2JX2643
2.0	100	50	0.400	0.630	0.187	0.25	0.055	4.0	9.0	11	15	40	60	60	2JX2641
2.0	200	100	0.400	0.630	0.312	0.25	0.06	3.0	8.0	11	15	38	60	60	2JX2245
2.0	200	100	0.400	0.630	0.187	0.25	0.06	3.0	8.0	11	15	38	60	60	2JX2645
2.0	300	150	0.400	0.630	0.187	0.1	0.055	—	4.0	5.0	8.0	40	60	60	2JX2644
2.0	300	150	0.400	0.630	0.312	0.1	0.055	—	4.0	5.0	8.0	40	60	60	2JX2244
3.0	100	70	0.400	0.630	0.187	0.75	0.02	—	16	18	22	42	70	70	3JX6160A
3.0	175	100	0.400	0.800	0.187	0.5	0.023	—	13	15	19	43	70	70	3JX6079A
5.0	100	50	0.400	0.630	0.312	0.75	0.01	11	18	21	24	39	70	70	5JX2293
5.0	100	50	0.400	0.630	0.187	0.75	0.01	11	18	21	24	39	70	70	5JX2693
5.0	100	50	0.375	0.790	0.187	1.5	0.015	15	25	27	30	45	60	70	5JX6022A
5.0	100	50	0.400	0.760	0.187	1.5	0.01	16	24	26	30	48	70	70	5JX2678
5.0	175	85	0.400	0.770	0.187	0.5	0.01	8.0	14	17	20	38	60	70	5JX6067A
5.0	175	85	0.400	0.800	0.187	0.5	0.01	6.0	14	16	20	36	64	70	5JX6045A
5.0	200	100	0.400	0.630	0.312	0.25	0.01	—	11	14	17	32	61	70	5JX2295
5.0	200	100	0.400	0.630	0.187	0.25	0.01	—	11	14	17	32	61	70	5JX2695
10	100	50	0.375	0.730	0.187	1.5	0.004	15	22	26	30	43	60	70	10JX2548A
10	100	50	0.375	0.385	0.187	1.5	0.004	18	26	28	32	46	54	70	10JX2117
10	100	50	0.375	0.730	0.312	1.5	0.004	16	22	26	30	43	60	70	10JX2112A
10	100	50	0.400	0.440	0.187	1.5	0.008	15	24	27	30	46	60	70	10JX6292
10	100	50	0.375	0.760	0.187	1.5	0.004	15	24	27	30	46	60	70	10JX6043A
10	175	100	0.375	0.385	0.187	0.5	0.004	8.0	16	18	20	38	55	70	10JX2545
15	100	50	0.400	0.370	0.187	0.75	0.004	8.0	17	18	20	38	54	70	15JX2589
15	100	50	0.375	0.370	0.187	1.5	0.0025	16	24	27	28	44	58	70	15JX2543
15	100	50	0.400	0.370	0.187	1.5	0.004	15	24	27	30	46	60	70	15JX2527
15	100	50	0.375	0.370	0.312	1.5	0.004	15	24	27	30	46	60	70	15JX2143
20	100	50	0.375	0.550	0.187	1.5	0.002	15	24	26	30	46	55	70	20JX2584A

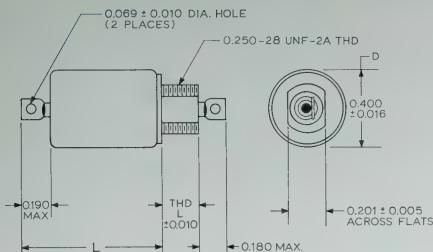
## DC Rated

# CERAMIC EMI-RFI FILTERS

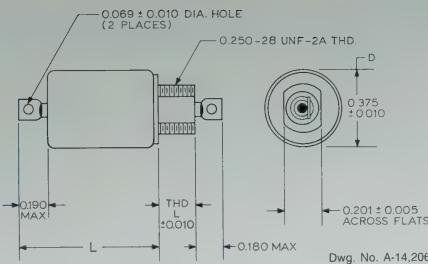
**L2 40dB/DECADE**



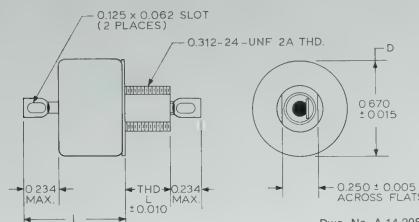
Dwg. No. A-14,175



Dwg. No. A-14,207



Dwg. No. A-14,206



Dwg. No. A-14,208

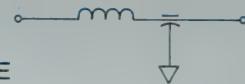
Current Rating (A)	DC Voltage Rating		D (in.)	Max. L (in.)	Thd. L (in.)	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at +25°C per MIL-STD-220							Sprague Part Number
	@85°C (V)	@125°C (V)						30 kHz (dB)	75 kHz (dB)	100 kHz (dB)	150 kHz (dB)	1 MHz (dB)	10 MHz (dB)	1 GHz (dB)	
0.1	100	50	0.400	0.630	0.312	0.75	1.7	20	35	41	48	70	70	70	1JX2208
0.1	100	50	0.400	0.630	0.187	0.75	1.7	20	35	41	48	70	70	70	1JX2608
0.1	100	50	0.400	0.760	0.187	0.75	1.9	24	40	46	51	70	80	80	1JX6017A
0.1	100	50	0.375	0.730	0.312	1.5	2.23	26	43	48	54	80	80	80	1JX6221B
0.1	100	50	0.375	0.730	0.187	1.5	2.23	26	43	48	54	80	80	80	1JX6201B
0.1	200	100	0.400	0.630	0.312	0.25	1.7	11	26	32	39	60	60	60	1JX2210
0.1	200	100	0.400	0.630	0.187	0.25	1.7	11	26	32	39	60	60	60	1JX2610
0.15	100	50	0.375	0.740	0.312	1.5	1.35	24	39	44	51	80	80	80	1JX6063B
0.15	100	50	0.375	0.740	0.187	1.5	1.35	24	39	44	51	80	80	80	1JX6061B
0.25	175	100	0.400	0.770	0.187	0.5	0.75	—	25	29	37	70	80	80	1JX6065B
0.3	100	50	0.400	0.630	0.312	0.75	0.75	15	31	35	42	70	70	70	1JX2218
0.3	100	50	0.400	0.630	0.187	0.75	0.75	15	31	35	42	70	70	70	1JX2618
0.3	200	100	0.400	0.630	0.312	0.25	0.75	6.0	22	25	32	60	60	60	1JX2220
0.3	200	100	0.400	0.630	0.187	0.25	0.75	6.0	22	25	32	60	60	60	1JX2620
0.3	200	100	0.400	0.630	0.187	0.25	0.7	6.0	22	25	32	60	60	60	1JX2616
0.45	100	50	0.375	0.740	0.312	1.5	0.6	18	33	35	44	76	80	80	1JX6064B
0.45	100	50	0.375	0.730	0.187	1.5	0.7	18	33	35	44	76	80	80	1JX6062B
0.45	100	50	0.400	0.770	0.187	1.5	0.45	20	33	39	45	70	70	70	1JX6085B
0.5	100	50	0.400	0.630	0.312	0.75	0.35	12	25	29	36	69	70	70	1JX2228
0.5	100	50	0.400	0.630	0.187	0.75	0.35	12	25	29	36	69	70	70	1JX2628
0.5	150	100	0.400	0.740	0.187	1.0	0.2	13	23	28	33	64	70	70	1JX6090B
0.5	150	75	0.400	0.800	0.187	0.5	0.5	11	24	31	37	70	80	80	1JX6077B
0.5	200	100	0.400	0.630	0.312	0.25	0.35	3.0	15	20	26	59	70	70	1JX2230
0.5	200	100	0.400	0.630	0.187	0.25	0.35	3.0	15	20	26	59	60	60	1JX2630
0.5	200	150	0.400	0.750	0.187	0.25	0.5	—	16	24	28	60	70	70	1JX6081B
1.0	100	50	0.400	0.630	0.312	0.75	0.14	11	18	21	26	55	70	70	1JX2238
1.0	100	50	0.400	0.630	0.187	0.75	0.14	11	18	21	26	55	70	70	1JX2638
1.0	100	50	0.400	0.760	0.187	1.5	0.025	17	28	30	35	70	80	80	1JX6068B
1.0	150	75	0.400	0.800	0.187	0.5	0.24	8.0	16	23	28	61	70	80	1JX6078B
1.0	175	100	0.400	0.770	0.187	0.5	0.14	—	—	—	24	54	80	80	1JX6066B
1.0	175	100	0.670	1.140	0.312	1.0	0.60	16	32	37	43	70	70	70	1JX6111B

Continued

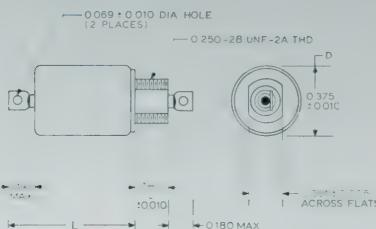
## DC Rated

# CERAMIC EMI-RFI FILTERS

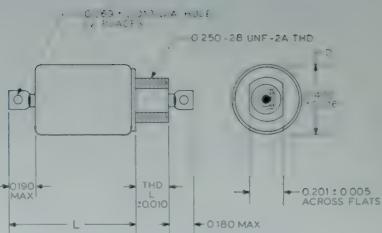
**L2** 40dB / DECADE



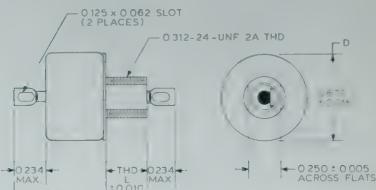
Dwg. No. A-14,175



Dwg. No. A-14,206



Dwg. No. A-14,207



Dwg. No. A-14,208

Current Rating (A)	DC Voltage Rating		D (in.)	Max. L (in.)	Thd. L (in.)	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at +25°C per MIL-STD-220							Sprague Part Number
	@85°C (V)	@125°C (V)						30 kHz (dB)	75 kHz (dB)	100 kHz (dB)	150 kHz (dB)	1 MHz (dB)	10 MHz (dB)	1 GHz (dB)	
1.0	200	100	0.400	0.630	0.312	0.25	0.14	3.0	9.0	12	16	46	60	60	1JX2240
1.0	200	100	0.400	0.630	0.187	0.25	0.14	3.0	9.0	12	16	46	60	60	1JX2640
1.0	250	150	0.400	0.750	0.187	0.25	0.24	—	12	14	20	52	80	80	1JX6082B
1.0	300	150	0.400	0.630	0.187	0.15	0.135	—	5.0	8.0	11	43	60	60	1JX2639
2.0	100	50	0.400	0.630	0.312	0.75	0.06	10	15	20	24	48	70	70	2JX2248
2.0	100	50	0.400	0.630	0.187	0.75	0.06	10	15	20	24	48	70	70	2JX2648
2.0	100	50	0.400	0.760	0.187	1.5	0.063	14	22	25	30	56	70	70	2JX6131B
2.0	100	50	0.400	0.630	0.187	0.25	0.055	4.0	9.0	11	15	40	60	60	2JX2646
2.0	100	50	0.400	0.630	0.312	0.1	0.055	—	4.0	5.0	8.0	40	60	60	2JX2249
2.0	200	100	0.400	0.630	0.312	0.25	0.06	3.0	8.0	11	15	38	60	60	2JX2250
2.0	200	100	0.400	0.630	0.187	0.25	0.06	3.0	8.0	11	15	38	60	60	2JX2650
2.0	300	150	0.400	0.630	0.187	0.15	0.055	10	15	20	24	48	70	70	2JX2649
3.0	100	70	0.400	0.630	0.187	0.75	0.02	—	16	18	22	42	70	70	3JX61608
3.0	175	100	0.400	0.800	0.187	0.5	0.023	—	13	15	19	43	70	70	3JX6079B
3.0	300	200	0.400	0.890	0.187	0.4	0.026	5.0	11	15	18	34	60	70	3JX3621B
4.0	250	150	0.670	0.900	0.312	0.25	0.012	—	—	9.0	13	33	70	70	4JX6142B
5.0	100	50	0.400	0.630	0.312	0.75	0.01	11	18	21	24	39	70	70	5JX2298
5.0	100	50	0.400	0.630	0.187	0.75	0.01	11	18	21	24	39	70	70	5JX2698
5.0	100	50	0.375	0.790	0.187	1.5	0.015	15	25	27	30	45	60	70	5JX6022B
5.0	175	85	0.400	0.800	0.187	0.5	0.014	8.0	14	17	20	38	60	70	5JX6080B
5.0	175	85	0.400	0.770	0.187	0.5	0.01	8.0	14	17	20	38	60	70	5JX6067B
5.0	175	85	0.400	0.800	0.187	0.5	0.01	6.0	14	16	20	36	64	70	5JX6045B
5.0	200	100	0.400	0.630	0.312	0.25	0.01	—	11	14	17	32	61	70	5JX2290
5.0	200	100	0.400	0.630	0.187	0.25	0.01	—	11	14	17	32	61	70	5JX2690
10	100	50	0.375	0.740	0.187	1.5	0.004	15	22	26	30	43	60	70	10JX2554B
10	100	50	0.375	0.740	0.312	1.5	0.004	15	21	25	28	42	56	70	10JX2115B
10	100	50	0.375	0.730	0.187	1.5	0.004	15	22	26	30	43	60	70	10JX2548B
10	100	50	0.375	0.730	0.312	1.5	0.004	16	22	26	30	43	60	70	10JX2112B
10	175	100	0.400	0.820	0.187	1.0	0.007	10	20	23	26	38	44	70	10JX6026B
10	300	200	0.400	0.820	0.312	0.32	0.003	4.0	12	14	18	33	45	70	10JX6124B

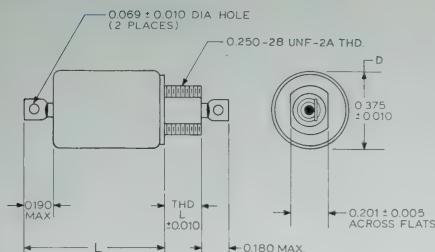
DC Rated

# CERAMIC EMI-RFI FILTERS

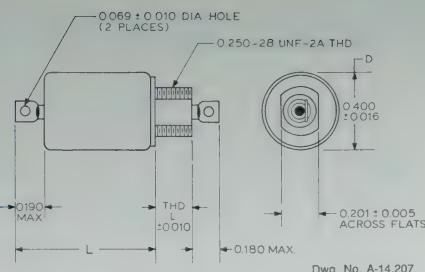
**Pi** 60dB / DECADE



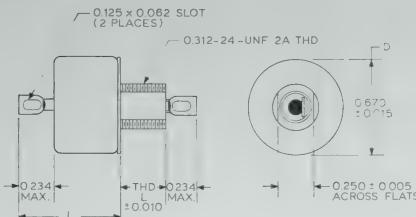
Dwg. No. A-14,174



Dwg. No. A-14,206



Dwg. No. A-14,207



Dwg. No. A-14,208

Current Rating (A)	DC Voltage Rating		Max. L (in.)	Thd. L (in.)	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at +25°C per MIL-STD-220							Sprague Part Number	
	@85°C (V)	@125°C (V)					30 kHz (dB)	75 kHz (dB)	100 kHz (dB)	150 kHz (dB)	1 MHz (dB)	10 MHz (dB)	1 GHz (dB)		
0.1	100	50	0.400	0.730	0.312	1.5	1.7	36	60	69	79	80	80	80	1JX2303
0.1	100	50	0.400	0.730	0.187	1.5	1.7	36	60	69	79	80	80	80	1JX2703
0.1	100	50	0.400	0.760	0.187	1.5	3.5	46	67	70	70	70	70	70	1JX2746
0.1	200	100	0.400	0.730	0.312	0.5	1.7	17	42	49	60	70	70	70	1JX2305
0.1	200	100	0.400	0.730	0.187	0.5	1.7	17	42	49	60	70	70	70	1JX2705
0.1	250	150	0.400	0.730	0.187	0.4	1.65	25	48	50	60	80	80	80	1JX2749
0.25	150	100	0.375	0.760	0.187	1.0	2.3	28	52	60	70	70	70	70	1JX2776
0.25	150	100	0.400	0.800	0.187	1.0	0.75	23	49	57	67	80	80	80	1JX2793
0.25	200	150	0.400	0.760	0.312	0.5	0.685	—	30	38	48	80	80	80	1JX2353
0.25	300	150	0.400	0.730	0.187	0.3	0.7	—	19	27	35	70	70	70	1JX2709
0.3	100	50	0.400	0.730	0.312	1.5	0.75	29	55	62	73	80	80	80	1JX2308
0.3	100	50	0.400	0.730	0.187	1.5	0.75	29	55	62	73	80	80	80	1JX2708
0.3	200	100	0.400	0.730	0.312	0.5	0.75	8.0	34	43	53	70	70	70	1JX2310
0.3	200	100	0.400	0.730	0.187	0.5	0.75	8.0	34	43	53	70	70	70	1JX2710
0.3	300	150	0.400	0.730	0.312	0.3	0.7	3.0	24	32	42	80	80	80	1JX2309
0.5	100	50	0.400	0.730	0.312	1.5	0.5	21	47	56	67	80	80	80	1JX2313
0.5	100	50	0.400	0.730	0.187	1.5	0.35	21	47	56	67	80	80	80	1JX2713
0.5	150	100	0.375	0.760	0.187	1.0	1.0	18	40	49	59	70	70	70	1JX2777
0.5	175	100	0.400	0.800	0.187	1.0	0.35	—	32	40	50	70	70	70	1JX2770
0.5	200	100	0.400	0.730	0.312	0.5	0.35	—	28	37	48	70	70	70	1JX2315
0.5	200	100	0.400	0.730	0.187	0.5	0.35	—	28	37	48	70	70	70	1JX2715
0.7	100	50	0.400	0.860	0.187	1.8	1.4	22	36	41	48	70	80	80	1JX6400
1.0	100	50	0.400	0.730	0.312	1.5	0.135	—	35	41	52	80	80	80	1JX2318
1.0	100	50	0.400	0.730	0.187	1.5	0.14	—	35	41	52	80	80	80	1JX2718
1.0	100	50	0.670	1.220	0.312	1.5	0.5	31	56	64	74	80	80	80	1JX2360
1.0	100	50	0.670	1.170	0.312	1.5	0.5	41	66	73	80	80	80	80	1JX2337
1.0	150	100	0.375	0.760	0.187	1.0	0.25	—	22	32	48	70	70	70	1JX2778
1.0	175	100	0.400	0.800	0.187	1.0	0.15	—	32	40	50	70	70	70	1JX2771
1.0	200	100	0.400	0.730	0.312	0.5	0.14	—	5.0	18	32	70	70	70	1JX2320
1.0	200	100	0.400	0.730	0.187	0.5	0.14	—	5.0	18	32	70	70	70	1JX2720
2.0	100	50	0.400	0.730	0.312	1.5	0.06	—	23	33	46	80	80	80	2JX2323
2.0	100	50	0.400	0.730	0.187	1.5	0.055	—	23	33	46	80	80	80	2JX2723
2.0	100	50	0.400	0.920	0.187	0.5	0.055	—	—	5.0	26	48	70	70	2JX2721
2.0	100	50	0.670	1.220	0.312	1.5	0.15	—	42	52	60	70	70	70	2JX2361

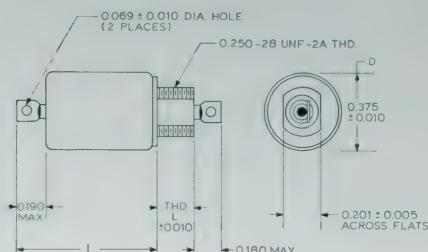
## DC Rated

# CERAMIC EMI-RFI FILTERS

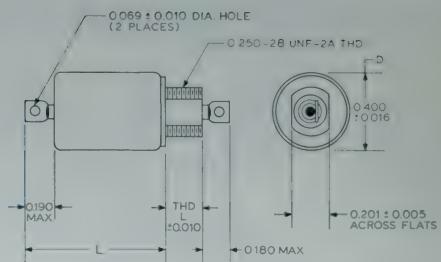
**Pi** 60dB / DECADE



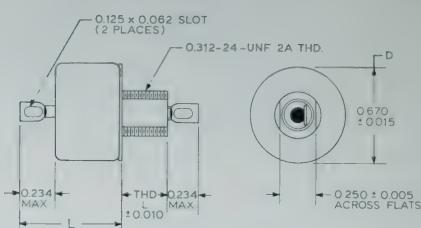
Dwg. No. A-14,174



Dwg. No. A-14,206



Dwg. No. A-14,207



Dwg. No. A-14,208

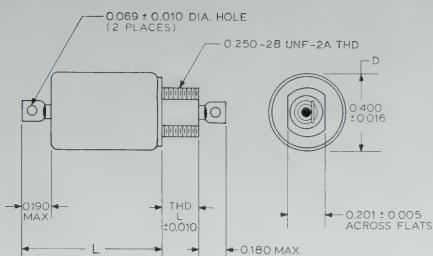
Current Rating (A)	DC Voltage Rating		D (in.)	Max. L (in.)	Thd. L (in.)	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at +25°C per MIL-STD-220								Sprague Part Number	
	@85°C (V)	@125°C (V)						30 kHz (dB)	75 kHz (dB)	100 kHz (dB)	150 kHz (dB)	1 MHz (dB)	10 MHz (dB)	1 GHz (dB)			
2.0	100	50	0.400	0.800	0.312	1.5	0.07	—	32	39	50	70	70	70	70	70	2JX2359
2.0	100	50	0.400	0.730	0.312	0.5	0.055	—	—	5.0	26	48	70	70	70	70	2JX2321
2.0	150	100	0.400	0.975	0.187	1.0	0.085	—	20	31	45	80	80	80	80	80	2JX6182
2.0	150	100	0.375	0.770	0.187	1.0	0.063	—	—	—	30	70	70	70	70	70	2JX2779
2.0	175	100	0.670	0.975	0.312	2.4	0.075	20	49	59	69	80	80	80	80	80	2JX2339
2.0	200	100	0.400	0.730	0.312	0.5	0.06	—	—	10	22	70	70	70	70	70	2JX2325
2.0	200	100	0.400	0.730	0.187	0.5	0.055	—	—	10	22	70	70	70	70	70	2JX2725
2.0	300	150	0.400	0.730	0.187	0.2	0.055	—	—	—	—	62	80	80	80	80	2JX2724
2.0	300	150	0.400	0.730	0.312	0.3	0.055	—	—	—	—	62	80	80	80	80	2JX2324
3.0	100	50	0.400	0.730	0.312	1.5	0.02	—	—	20	30	80	80	80	80	80	3JX2331
3.0	100	50	0.400	0.730	0.187	1.5	0.02	—	—	20	30	80	80	80	80	80	3JX2731
3.0	100	70	0.400	0.730	0.187	1.5	0.02	—	—	14	33	80	80	80	80	80	3JX2795
3.0	100	70	0.400	0.730	0.312	1.5	0.02	—	—	15	33	80	80	80	80	80	3JX2395
3.0	100	50	0.670	1.220	0.312	1.5	0.073	—	32	41	54	80	80	80	80	80	3JX2362
3.0	175	100	0.375	0.760	0.187	1.0	0.027	—	—	—	10	70	70	70	70	70	3JX2780
3.0	175	100	0.400	0.800	0.187	1.0	0.02	—	—	—	23	80	80	80	80	80	3JX2772
3.0	175	100	0.670	1.185	0.312	2.4	0.03	—	38	46	56	70	70	70	70	70	3JX6379
3.0	175	100	0.400	0.975	0.187	1.0	0.07	—	11	24	39	80	80	80	80	80	3JX6183
3.0	200	100	0.400	0.730	0.312	0.5	0.02	—	—	—	—	65	70	70	70	70	3JX2329
3.0	200	100	0.400	0.730	0.187	0.5	0.02	—	—	—	—	65	70	70	70	70	3JX2729
3.0	250	150	0.400	0.730	0.312	0.5	0.02	—	—	—	—	68	80	80	80	80	3JX2396
5.0	100	50	0.400	0.730	0.312	1.5	0.01	—	—	—	26	73	80	80	80	80	5JX2332
5.0	100	50	0.400	0.730	0.187	1.5	0.01	—	—	—	26	73	80	80	80	80	5JX2732
5.0	100	50	0.400	0.860	0.312	3.0	0.025	—	—	27	42	80	80	80	80	80	5JX2789
5.0	150	100	0.375	0.780	0.187	1.0	0.01	—	—	—	—	68	70	80	80	80	5JX2760
5.0	175	100	0.670	1.170	0.312	1.0	0.02	—	—	22	39	80	80	80	80	80	5JX2782
5.0	175	100	0.400	0.800	0.187	1.0	0.01	—	—	—	—	70	70	70	70	70	5JX2773
5.0	200	100	0.400	0.730	0.312	0.5	0.01	—	—	—	—	55	70	70	70	70	5JX2330
5.0	200	100	0.400	0.730	0.187	0.5	0.01	—	—	—	—	55	70	70	70	70	5JX2730
5.0	250	150	0.400	0.780	0.187	0.5	0.01	—	—	—	—	70	70	80	80	80	5JX2762
10	100	50	0.400	0.660	0.187	1.5	0.003	16	22	26	30	43	62	65	65	65	10JX2507
10	100	50	0.400	0.660	0.187	1.5	0.01	16	22	26	30	43	62	70	70	70	10JX2506
10	100	50	0.400	0.660	0.312	1.5	0.01	16	22	26	30	43	62	65	65	65	10JX2107
10	150	75	0.670	1.280	0.312	2.0	0.006	16	22	28	44	48	65	70	70	70	10JX2340
10	175	100	0.375	0.730	0.187	1.0	0.003	13	21	23	27	43	70	70	70	70	10JX2781

## CERAMIC EMI-RFI FILTERS

T 60dB / DECADE



Dwg. No. A-14,173



Dwg. No. A-14,207

Current Rating (A)	DC Voltage Rating		D (in.)	Max. L (in.)	Thd. L (in.)	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at + 25°C per MIL-STD-220							Sprague Part Number
	@85°C (V)	@125°C (V)						30 kHz (dB)	75 kHz (dB)	100 kHz (dB)	150 kHz (dB)	1 MHz (dB)	10 MHz (dB)	1 GHz (dB)	
0.1	100	50	0.400	0.860	0.187	0.75	2.9	32	55	63	70	70	70	70	1JX2811
0.1	100	50	0.400	0.860	0.312	0.75	3.7	32	55	63	70	70	70	70	1JX2411
0.25	100	50	0.400	0.860	0.187	0.75	2.5	30	54	60	71	80	80	80	1JX2825
0.3	100	50	0.400	0.860	0.312	0.75	1.55	20	42	50	56	70	70	70	1JX2412
0.3	100	50	0.400	0.860	0.187	0.75	1.4	20	42	50	56	70	70	70	1JX2812
0.45	100	50	0.400	1.110	0.312	0.75	1.3	39	63	69	80	80	80	80	1JX2427
0.5	100	50	0.400	0.860	0.312	0.75	0.66	15	33	40	50	70	70	70	1JX2413
0.5	100	50	0.400	0.860	0.187	0.75	0.6	15	33	40	50	70	70	70	1JX2813
1.0	100	50	0.400	0.860	0.187	0.75	0.3	12	20	25	32	71	80	80	1JX2801
1.0	100	50	0.400	0.860	0.312	0.75	0.3	7.0	18	21	26	69	70	70	1JX2414
1.0	100	50	0.400	0.860	0.187	0.75	0.27	7.0	18	21	26	69	70	70	1JX2814
1.0	150	100	0.400	1.110	0.187	1.0	0.25	—	23	27	35	80	80	80	1JX2820
2.0	100	50	0.400	0.945	0.312	0.75	0.08	—	—	20	22	58	70	70	2JX2424B
2.0	100	50	0.400	0.860	0.312	0.75	0.12	5.0	15	18	22	60	70	70	2JX2415
2.0	100	50	0.400	0.860	0.187	0.75	0.12	5.0	15	18	22	60	70	70	2JX2815
2.0	175	100	0.400	0.945	0.312	0.5	0.095	—	11	15	19	55	70	70	2JX2432
3.0	100	50	0.400	0.860	0.187	0.75	0.05	—	13	18	21	48	80	80	3JX2802
3.0	100	50	0.400	1.125	0.312	1.5	0.0185	10	16	19	24	50	70	70	3JX2405
3.0	175	100	0.400	1.110	0.187	1.0	0.05	—	—	20	23	50	80	80	3JX2821
10	100	50	0.400	1.110	0.187	1.5	0.01	8.0	16	19	24	40	54	70	10JX2804
15	100	50	0.400	0.890	0.187	0.75	0.0015	11	21	23	26	43	56	70	15JX2817

DC Rated

# CERAMIC EMI-RFI FILTERS

**LL1** 80dB / DECADE

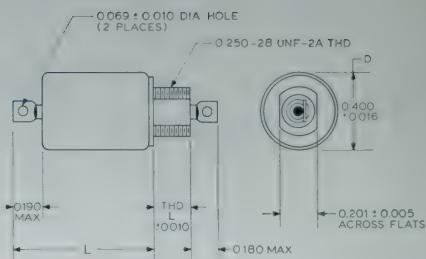


Dwg. No. A-14.276

**LL2** 80dB / DECADE



Dwg. No. A-14.277



Dwg. No. A-14.207

Current Rating (A)	DC Voltage Rating		D (in.)	Max. L (in.)	Thd. L (in.)	Circuit	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at + 25°C per MIL-STD-220							Sprague Part Number	
	@85°C (V)	@125°C (V)							30 kHz (dB)	75 kHz (dB)	100 kHz (dB)	150 kHz (dB)	1 MHz (dB)	10 MHz (dB)	100 MHz (dB)	1 GHz (dB)	
0.1	100	50	0.400	1.05	0.312	LL1	1.5	3.4	45	76	80	80	80	80	80	80	1JX2451
0.1	100	50	0.400	1.05	0.187	LL1	1.5	3.4	45	76	80	80	80	80	80	80	1JX2851
0.1	100	50	0.400	1.05	0.312	LL2	1.5	3.4	45	76	80	80	80	80	80	80	1JX2456
0.1	100	50	0.400	1.05	0.187	LL2	1.5	3.4	45	76	80	80	80	80	80	80	1JX2856
0.3	100	50	0.400	1.05	0.312	LL1	1.5	1.5	35	66	75	80	80	80	80	80	1JX2452
0.3	100	50	0.400	1.05	0.187	LL1	1.5	1.5	35	66	75	80	80	80	80	80	1JX2852
0.3	100	50	0.400	1.05	0.312	LL2	1.5	1.5	35	66	75	80	80	80	80	80	1JX2457
0.3	100	50	0.400	1.05	0.187	LL2	1.5	1.5	35	66	75	80	80	80	80	80	1JX2857
0.5	100	50	0.400	1.22	0.312	LL2	3.0	0.3	26	60	65	77	80	80	80	80	1JX2465
0.5	100	50	0.400	1.05	0.312	LL1	1.5	0.75	23	56	62	72	80	80	80	80	1JX2453
0.5	100	50	0.400	1.05	0.187	LL1	1.5	0.75	23	56	62	72	80	80	80	80	1JX2853
0.5	100	50	0.400	1.05	0.312	LL2	1.5	0.75	23	56	62	72	80	80	80	80	1JX2458
0.5	100	50	0.400	1.05	0.187	LL2	1.5	0.75	23	56	62	72	80	80	80	80	1JX2858
1.0	100	50	0.400	1.05	0.312	LL1	1.5	0.3	—	32	42	48	80	80	80	80	1JX2454
1.0	100	50	0.400	1.05	0.187	LL1	1.5	0.3	—	32	42	48	80	80	80	80	1JX2854
1.0	100	50	0.400	1.05	0.312	LL2	1.5	0.3	—	32	42	48	80	80	80	80	1JX2459
1.0	100	50	0.400	1.05	0.187	LL2	1.5	0.3	—	32	42	48	80	80	80	80	1JX2859
2.0	100	50	0.400	1.05	0.312	LL1	1.5	0.13	—	20	30	38	80	80	80	80	2JX2455
2.0	100	50	0.400	1.05	0.187	LL1	1.5	0.13	—	20	30	38	80	80	80	80	2JX2855
2.0	100	50	0.400	1.05	0.312	LL2	1.5	0.13	—	20	30	38	80	80	80	80	2JX2460
2.0	100	50	0.400	1.05	0.187	LL2	1.5	0.13	—	20	30	38	80	80	80	80	2JX2860
3.0	100	50	0.400	1.05	0.312	LL2	1.5	0.037	—	—	15	30	80	80	80	80	3JX2462
3.0	100	50	0.400	1.05	0.312	LL1	1.5	0.037	—	—	15	30	80	80	80	80	3JX2461

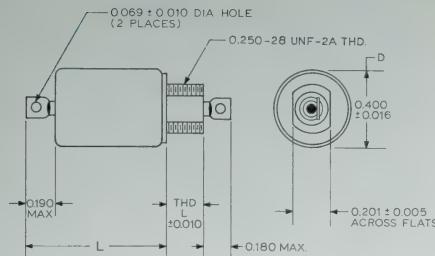
AC Rated

# CERAMIC EMI-RFI FILTERS

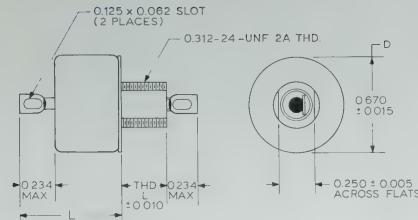
**C** 20dB / DECADE



Dwg. No. A-14,172



Dwg. No. A-14.207



Dwg. No. A-14.208

Current Rating (A)	Voltage Rating		D	Max. L (in.)	Thd. L (in.)	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at + 25°C per MIL-STD-220							Sprague Part Number
	85°C DC (V)	125°C DC (V)						30 kHz (dB)	75 kHz (dB)	100 kHz (dB)	150 kHz (dB)	1 MHz (dB)	10 MHz (dB)	1 GHz (dB)	
5.0	250	150 125	0.400	0.440	0.187	0.25	0.01	—	11	14	17	32	50	70	5JX3502
5.0	250	150 125	0.400	0.440	0.312	0.25	0.01	—	9.0	11	15	30	50	70	5JX3102
5.0	300	150 125	0.400	0.440	0.187	0.15	0.01	—	—	5.0	7.0	22	44	60	5JX3501
5.0	300	150 125	0.400	0.440	0.312	0.1	0.01	—	—	4.0	7.0	22	42	70	5JX3101
10	300	200 125	0.400	0.440	0.312	0.1	0.004	—	—	4.0	8.0	24	42	70	10JX2141
15	250	150 125	0.400	0.440	0.187	0.25	0.004	—	8.0	12	15	30	60	70	15JX3503
15	250	150 125	0.400	0.545	0.187	0.25	0.004	—	10	13	16	31	50	60	15JX2585
15	300	150 125	0.400	0.390	0.312	0.15	0.005	—	—	5.0	7.0	24	44	70	15JX2137
15	400	300 230	0.400	0.440	0.187	0.04	0.004	—	—	—	—	16	36	70	15JX3508
15	450	300 230	0.670	0.690	0.312	0.3	0.005	—	12	14	18	34	44	70	15JX3103

**L1** 40dB / DECADE



Dwg. No. A-14,176

Current Rating (A)	Voltage Rating		D	Max. L (in.)	Thd. L (in.)	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at + 25°C per MIL-STD-220							Sprague Part Number
	85°C DC (V)	125°C DC (V)						30 kHz (dB)	75 kHz (dB)	100 kHz (dB)	150 kHz (dB)	1 MHz (dB)	10 MHz (dB)	1 GHz (dB)	
0.1	250	150 125	0.400	0.630	0.312	0.25	1.7	12	28	33	39	60	60	60	1JX3201
0.1	250	150 125	0.400	0.630	0.187	0.25	1.7	12	28	33	39	60	60	60	1JX3601
0.3	250	150 125	0.400	0.630	0.312	0.25	0.75	3.0	13	24	28	60	60	60	1JX3202
0.3	250	150 125	0.400	0.630	0.187	0.25	0.75	3.0	18	24	28	60	60	60	1JX3602
0.5	200	150 125	0.670	0.890	0.312	0.25	0.4	6.0	24	28	35	68	70	70	1JX3248
0.5	250	150 125	0.400	0.630	0.312	0.25	0.35	—	14	18	20	56	60	60	1JX3203
0.5	250	150 125	0.400	0.630	0.187	0.25	0.35	—	14	18	20	56	60	60	1JX3603
0.5	300	200 125	0.670	0.890	0.312	0.33	0.4	9.0	25	31	38	71	80	80	1JX3268A
0.5	450	300 230	0.670	0.890	0.312	0.15	0.4	7.0	19	24	32	64	80	80	1JX3275A

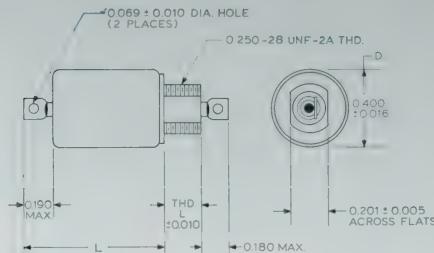
AC Rated

# CERAMIC EMI-RFI FILTERS

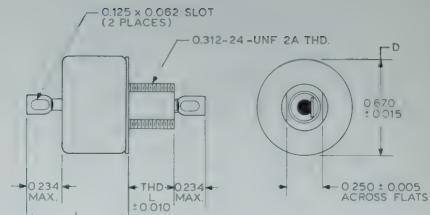
**L1** 40dB / DECADE



Dwg. No. A-14,176



Dwg. No. A-14,207



Dwg. No. A-14,208

Current Rating (A)	Voltage Rating		D (in.)	Max. L (in.)	Thd. L (in.)	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at +25°C per MIL-STD-220							Sprague Part Number
	85°C DC (V)	125°C DC (V)						30 kHz (dB)	75 kHz (dB)	100 kHz (dB)	150 kHz (dB)	1 MHz (dB)	10 MHz (dB)	1 GHz (dB)	
1.0	200	150 125	0.670	0.890	0.312	0.25	0.21	—	13	20	27	60	70	70	1JX3236
1.0	250	150 125	0.400	0.630	0.312	0.25	0.14	—	6.0	10	12	44	60	60	1JX3204
1.0	250	150 125	0.400	0.630	0.187	0.25	0.14	—	6.0	10	12	44	60	60	1JX3604
1.0	300	200 125	0.400	0.800	0.312	0.15	0.15	—	8.0	11	42	70	80	80	1JX3172A
1.0	300	200 125	0.670	0.890	0.312	0.33	0.23	—	18	24	31	64	80	80	1JX3269A
1.0	450	300 230	0.670	0.890	0.312	0.15	0.23	—	10	17	23	56	80	80	1JX3276A
2.0	250	150 125	0.670	0.890	0.312	0.25	0.043	—	10	14	19	46	70	70	2JX3246A
2.0	250	150 125	0.670	0.890	0.312	0.25	0.075	—	10	14	19	46	70	70	2JX3237
2.0	250	150 125	0.400	0.630	0.312	0.25	0.06	—	5.0	7.0	10	35	60	60	2JX3205
2.0	250	150 125	0.400	0.630	0.187	0.25	0.06	—	5.0	7.0	10	35	60	60	2JX3605
2.0	300	200 125	0.670	0.890	0.312	0.33	0.075	—	8.0	13	19	49	70	70	2JX3270A
2.0	450	300 185	0.670	1.400	0.312	0.15	0.055	—	—	7.0	11	30	70	70	2JX3227A
3.0	250	150 125	0.400	0.750	0.187	0.25	0.023	—	—	—	12	33	70	70	3JX6083A
3.0	250	150 125	0.400	0.690	0.187	0.25	0.02	5.0	11	13	16	34	65	70	3JX3623
3.0	250	150 125	0.670	0.890	0.312	0.25	0.03	5.0	13	15	19	45	70	70	3JX3238
3.0	250	150 125	0.400	0.630	0.312	0.25	0.02	5.0	11	13	15	33	68	70	3JX3222
3.0	300	200 125	0.670	0.890	0.312	0.45	0.03	—	7.0	14	19	43	70	70	3JX6384A
3.0	300	200 125	0.670	0.890	0.312	0.33	0.03	—	—	12	14	43	80	80	3JX3271A
3.0	300	150 125	0.670	0.890	0.312	0.33	0.03	5.0	15	17	22	45	70	70	3JX3252B
3.0	450	300 230	0.670	0.890	0.312	0.15	0.03	—	—	6.0	9.0	35	70	70	3JX3278A
5.0	250	150 125	0.400	0.630	0.312	0.25	0.01	—	11	14	17	32	61	70	5JX3223
5.0	250	150 125	0.400	0.630	0.187	0.25	0.01	—	—	5.0	7.0	28	59	60	5JX3623
5.0	250	150 125	0.400	0.750	0.187	0.25	0.014	4.0	10	13	17	33	70	70	5JX6084A
5.0	300	200 150	0.670	0.890	0.312	0.15	0.013	—	—	—	13	32	69	70	5JX3253A
10	250	150 125	0.670	0.890	0.312	0.25	0.008	—	8.0	12	14	30	60	70	10JX3240
15	300	150 125	0.670	0.890	0.312	0.33	0.004	—	8.0	12	15	30	50	70	15JX3274A

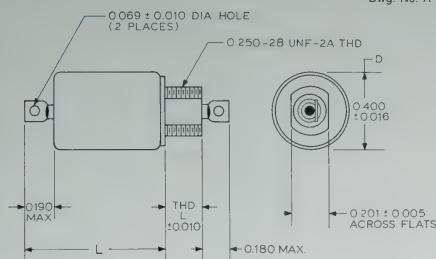
AC Rated

# CERAMIC EMI-RFI FILTERS

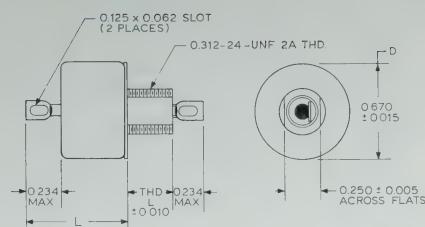
**L2** 40dB / DECADE



Dwg. No. A-14,175



Dwg. No. A-14,207



Dwg. No. A-14,208

Current Rating (A)	Voltage Rating		D (in.)	Max. L (in.)	Thd. L (in.)	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at +25°C per MIL-STD-220							Sprague Part Number	
	85°C DC (V)	125°C DC 400Hz (V)						30 kHz (dB)	75 kHz (dB)	100 kHz (dB)	150 kHz (dB)	1 MHz (dB)	10 MHz (dB)	1 GHz (dB)		
0.1	250	150	125	0.400	0.630	0.312	0.25	1.7	12	28	33	39	60	60	60	1JX3206
0.1	250	150	125	0.400	0.630	0.187	0.25	1.7	12	28	33	39	60	60	60	1JX3606
0.25	300	200	125	0.400	0.760	0.312	0.16	1.6	—	15	20	31	60	60	60	1JX6149B
0.3	250	150	125	0.400	0.630	0.312	0.25	0.75	3.0	18	24	28	60	60	60	1JX3207
0.3	250	150	125	0.400	0.630	0.187	0.25	0.75	3.0	18	24	28	60	60	60	1JX3607
0.5	250	150	125	0.400	0.630	0.312	0.25	0.35	—	14	18	20	56	60	60	1JX3208
0.5	250	150	125	0.400	0.630	0.187	0.25	0.35	—	14	18	20	56	60	60	1JX3608
0.5	300	200	125	0.670	0.890	0.312	0.33	0.4	9.0	25	31	38	71	80	80	1JX3268B
0.5	450	300	230	0.670	0.890	0.312	0.15	0.4	7.0	19	24	32	64	80	80	1JX3275B
1.0	200	150	125	0.670	0.890	0.312	0.25	0.4	6.0	24	28	35	68	70	70	1JX3242
1.0	200	150	125	0.670	0.890	0.312	0.25	0.21	—	13	20	27	60	70	70	1JX3230
1.0	250	150	125	0.400	0.630	0.312	0.25	0.14	—	6.0	10	12	44	60	60	1JX3209
1.0	250	150	125	0.400	0.630	0.187	0.25	0.14	—	6.0	10	12	44	60	60	1JX3609
1.0	300	200	125	0.670	0.890	0.312	0.33	0.23	—	18	24	31	64	80	80	1JX3269B
1.0	450	300	230	0.670	0.890	0.312	0.15	0.21	—	15	20	27	62	70	70	1JX3258B
1.0	450	300	230	0.670	0.890	0.312	0.15	0.23	—	10	17	23	56	80	80	1JX3276B
2.0	200	150	125	0.670	0.890	0.312	0.25	0.075	—	10	14	19	46	70	70	2JX3231
2.0	250	150	125	0.400	0.630	0.312	0.25	0.06	—	5.0	7.0	10	35	60	60	2JX3210
2.0	250	150	125	0.400	0.630	0.187	0.25	0.06	—	5.0	7.0	10	35	60	60	2JX3610
2.0	250	200	125	0.670	0.890	0.312	0.33	0.075	—	10	16	20	50	70	70	2JX3251B
2.0	250	150	125	0.670	0.890	0.312	0.25	0.043	—	10	14	19	46	70	70	2JX3246B
2.0	300	200	125	0.670	0.890	0.312	0.33	0.075	—	8.0	13	19	49	70	70	2JX3270B

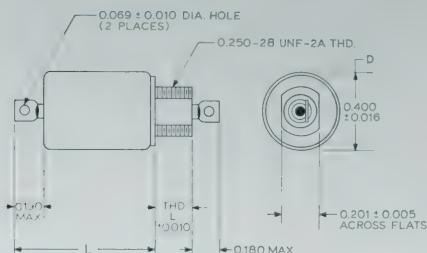
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# CERAMIC EMI-RFI FILTERS

**L2** 40dB/DECADE



Dwg. No. A-14,175



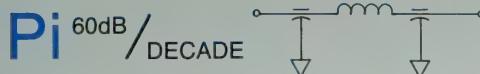
Dwg. No. A-14,208

Dwg. No. A-14,207

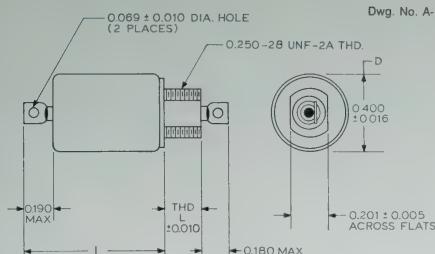
Current Rating (A)	Voltage Rating		D (in.)	Max. L (in.)	Thd. L (in.)	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at +25°C per MIL-STD-220						Sprague Part Number	
	85°C DC (V)	125°C DC (V)						30 kHz (dB)	75 kHz (dB)	100 kHz (dB)	150 kHz (dB)	1 MHz (dB)	10 MHz (dB)	1 GHz (dB)	
2.0	300	200 125	0.670	0.890	0.312	0.33	0.06	—	10	14	23	60	80	80	2JJX2599A
2.0	450	300 230	0.670	0.890	0.312	0.15	0.075	—	6.0	9.0	10	41	70	70	2JJX3277B
3.0	250	150 125	0.670	0.890	0.312	0.25	0.03	5.0	13	15	19	45	70	70	3JJX2322
3.0	250	150 125	0.400	0.630	0.312	0.25	0.02	5.0	11	13	15	33	68	70	3JJX3212
3.0	250	150 125	0.400	0.750	0.187	0.25	0.023	—	—	—	12	33	70	70	3JJX6083B
3.0	250	150 125	0.400	0.630	0.187	0.25	0.02	5.0	11	13	16	34	65	70	3JJX3613
3.0	300	200 125	0.400	0.690	0.187	0.20	0.02	—	—	—	—	28	61	70	3JJX3661B
3.0	300	200 125	0.670	0.890	0.312	0.45	0.03	—	7.0	14	19	43	70	70	3JJX6384B
3.0	300	200 125	0.670	0.890	0.312	0.33	0.03	—	—	12	14	43	80	80	3JJX3271B
3.0	450	300 230	0.670	0.890	0.312	0.15	0.03	—	—	6.0	9.0	35	70	70	3JJX3278B
5.0	250	150 125	0.400	0.750	0.187	0.25	0.014	4.0	10	13	17	33	70	70	5JJX6084B
5.0	250	150 125	0.400	0.630	0.312	0.25	0.01	—	11	14	17	32	61	70	5JJX3213
5.0	250	150 125	0.400	0.630	0.187	0.25	0.01	—	11	14	17	32	61	70	5JJX3613
5.0	250	150 125	0.670	0.890	0.312	0.25	0.015	4.0	11	14	16	38	70	70	5JJX3233
5.0	300	200 125	0.670	0.900	0.312	0.33	0.013	4.0	10	12	16	38	60	70	5JJX3272B
5.0	300	200 125	0.670	0.890	0.312	0.15	0.013	—	—	—	13	32	69	70	5JJX3253B
5.0	450	300 230	0.670	0.900	0.312	0.15	0.013	—	8.0	10	13	32	65	70	5JJX3279B
10	250	150 125	0.670	0.890	0.312	0.25	0.0075	—	8.0	12	14	30	60	70	10JJX3234
10	300	200 125	0.670	0.890	0.312	0.33	0.0075	—	—	14	18	34	54	70	10JJX3254B
15	300	200 125	0.670	1.440	0.312	0.66	0.0055	8.0	16	18	22	38	55	70	15JJX3285B
15	300	150 125	0.670	0.890	0.312	0.33	0.004	—	8.0	12	15	30	50	70	15JJX3274B

AC Rated

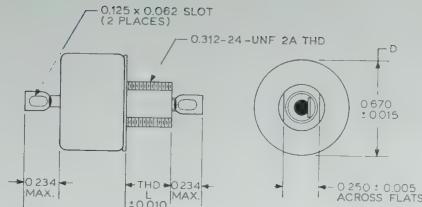
# CERAMIC EMI-RFI FILTERS



Dwg. No. A-14,174



Dwg. No. A-14,207

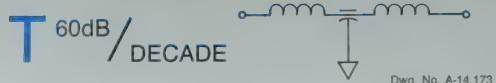


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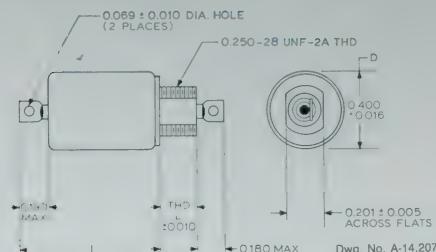
Current Rating (A)	Voltage Rating		D (in.)	Max. L (in.)	Thd. L (in.)	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at +25°C per MIL-STD-220							Sprague Part Number	
	85°C DC (V)	125°C DC (V) 400Hz (V)						30 kHz (dB)	75 kHz (dB)	100 kHz (dB)	150 kHz (dB)	1 MHz (dB)	10 MHz (dB)	1 GHz (dB)		
0.1	250	150	125	0.400	0.730	0.312	0.5	1.7	15	40	50	56	70	70	70	1JX3301
0.1	250	150	125	0.400	0.730	0.187	0.5	1.7	15	40	50	56	70	70	70	1JX3701
0.15	450	300	230	0.670	1.190	0.312	0.3	0.3	—	28	37	47	80	80	80	1JX3340
0.3	250	150	125	0.400	0.730	0.312	0.5	0.75	9.0	35	42	50	70	70	70	1JX3302
0.3	250	150	125	0.400	0.730	0.187	0.5	0.75	9.0	35	42	50	70	70	70	1JX3702
0.3	300	150	125	0.400	0.730	0.187	0.3	0.65	—	15	23	33	70	70	70	1JX3706
0.5	250	150	125	0.400	0.730	0.312	0.5	0.35	—	28	38	48	80	80	80	1JX3362
0.5	250	150	125	0.670	1.020	0.312	0.5	0.4	14	40	47	58	80	80	80	1JX3319
0.5	250	150	125	0.400	0.730	0.312	0.5	0.35	—	28	38	46	70	70	70	1JX3303
0.5	250	150	125	0.400	0.730	0.187	0.5	0.35	—	28	38	46	70	70	70	1JX3703
1.0	250	150	125	0.670	1.020	0.312	0.5	0.21	—	33	40	51	80	80	80	1JX3325
1.0	250	150	125	0.670	1.020	0.312	0.5	0.21	—	—	36	47	80	80	80	1JX3320
1.0	250	150	125	0.670	1.170	0.312	0.5	0.35	4.0	33	40	51	80	80	80	1JX3312
1.0	250	150	125	0.400	0.730	0.312	0.5	0.14	—	—	18	28	70	70	70	1JX3304
1.0	250	150	125	0.400	0.730	0.187	0.5	0.14	—	—	18	28	70	70	70	1JX3704
1.0	300	200	125	0.670	1.020	0.312	0.66	0.23	—	36	44	54	80	80	80	1JX3365
1.0	300	150	125	0.400	0.730	0.312	0.24	0.105	—	—	—	11	67	80	80	1JX3364
1.0	450	300	230	0.670	1.190	0.312	0.3	0.3	—	22	32	42	80	80	80	1JX3355
2.0	250	150	125	0.400	0.730	0.312	0.5	0.06	—	—	—	22	70	70	70	2JX3305
2.0	250	150	125	0.400	0.730	0.187	0.5	0.06	—	—	—	22	70	70	70	2JX3705
2.0	250	200	125	0.670	1.030	0.312	0.66	0.075	—	—	24	36	80	80	80	2JX3334
2.0	250	150	125	0.670	1.020	0.312	0.5	0.075	—	10	30	41	70	70	70	2JX3326
3.0	250	150	125	0.400	0.730	0.312	0.5	0.02	—	—	—	—	60	70	70	3JX3308
3.0	250	150	125	0.400	0.730	0.187	0.5	0.02	—	—	—	—	60	70	70	3JX3708
3.0	250	150	125	0.400	1.100	0.312	0.5	0.035	—	—	—	13	70	80	80	3JX3327
3.0	250	150	125	0.670	1.020	0.312	0.5	0.03	15	27	33	36	70	70	70	3JX3322
3.0	300	200	125	0.670	1.030	0.312	0.9	0.03	—	13	22	36	70	70	70	3JX6389
3.0	300	250	220	0.400	0.730	0.312	0.3	0.02	—	—	—	—	52	80	80	3JX3356
5.0	250	150	125	0.400	0.730	0.312	0.5	0.01	—	—	—	—	50	70	70	5JX3309
5.0	250	150	125	0.400	0.730	0.187	0.5	0.01	—	—	—	—	55	70	70	5JX3709
5.0	300	150	125	0.670	1.200	0.312	0.66	0.015	—	—	—	15	70	70	70	5JX3335
10	200	150	125	0.670	1.185	0.312	1.0	0.009	—	—	—	—	70	80	80	10JX3367
10	250	150	125	0.670	1.185	0.312	0.5	0.008	8.0	15	16	—	55	70	70	10JX3324
10	250	150	125	0.400	0.940	0.187	0.5	0.009	7.0	14	16	20	43	70	70	10JX3715
10	300	200	125	0.670	1.200	0.312	0.66	0.005	—	—	—	16	48	70	70	10JX3336
10	300	200	125	0.400	0.760	0.312	0.3	0.003	—	—	—	—	30	70	70	10JX6295

## AC Rated

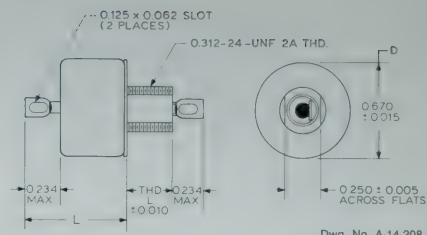
# CERAMIC EMI-RFI FILTERS



Dwg. No. A-14,173



Dwg. No. A-14,207

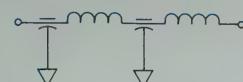


Dwg. No. A-14,208

Current Rating (A)	Voltage Rating			D (in.)	Max. L (in.)	Thd. L (in.)	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at +25°C per MIL-STD-220							Sprague Part Number
	85°C DC (V)	125°C DC (V)	400Hz (V)						30 kHz (dB)	75 kHz (dB)	100 kHz (dB)	150 kHz (dB)	1 MHz (dB)	10 MHz (dB)	1 GHz (dB)	
0.06	250	150	125	0.400	0.890	0.187	0.25	4.0	30	55	62	70	70	70	70	1JJX3810
0.1	250	150	125	0.400	0.860	0.187	0.25	3.7	16	40	47	56	60	60	60	1JJX3811
0.1	250	150	125	0.400	0.860	0.312	0.25	3.7	16	40	47	56	60	60	60	1JJX3411
0.25	300	200	125	0.400	0.860	0.312	0.16	1.55	4.0	28	36	47	80	80	80	1JJX3436
0.3	250	150	125	0.400	0.860	0.312	0.25	1.55	—	27	35	43	60	60	60	1JJX3412
0.3	250	150	125	0.400	0.860	0.187	0.25	1.55	—	27	35	43	60	60	60	1JJX3812
0.3	300	150	125	0.400	0.940	0.187	0.15	1.01	—	22	30	41	70	70	70	1JJX3803
0.5	250	150	125	0.400	0.860	0.312	0.25	0.66	—	21	30	37	60	60	60	1JJX3413
0.5	250	150	125	0.400	0.860	0.187	0.25	0.66	—	21	30	37	60	60	60	1JJX3813
0.5	300	200	125	0.670	1.185	0.312	0.33	0.8	18	42	50	60	80	80	80	1JJX3428
1.0	250	150	125	0.400	0.810	0.187	0.25	0.5	—	9.0	15	22	70	70	70	1JJX3824
1.0	250	150	125	0.400	0.860	0.187	0.25	0.135	4.0	11	15	24	64	80	80	1JJX3805
1.0	250	150	125	0.670	1.185	0.312	0.25	0.5	—	29	37	48	80	80	80	1JJX3419
1.0	250	150	125	0.400	0.860	0.312	0.25	0.3	—	9.0	12	16	60	60	60	1JJX3414
1.0	250	150	125	0.400	0.860	0.187	0.25	0.3	—	9.0	12	16	60	60	60	1JJX3814
1.0	300	200	125	0.670	1.185	0.312	0.33	0.42	—	26	34	44	80	80	80	1JJX3429
1.0	450	300	230	0.670	1.185	0.312	0.15	0.42	—	18	27	38	80	80	80	1JJX3432
1.0	450	300	185	0.670	1.200	0.312	0.15	0.46	8.0	21	27	39	60	60	60	1JJX3424
1.5	250	150	125	0.670	1.185	0.312	0.25	0.15	—	7.0	16	25	70	70	70	2JJX3406
2.0	250	150	125	0.400	0.860	0.312	0.25	0.12	—	7.0	10	11	45	60	60	2JJX3415
2.0	250	150	125	0.400	0.860	0.187	0.25	0.12	—	7.0	10	11	45	60	60	2JJX3815
3.0	250	150	125	0.400	0.860	0.187	0.25	0.04	—	—	—	12	33	80	80	3JJX3806
3.0	250	150	125	0.400	0.860	0.312	0.25	0.04	—	—	—	12	32	80	80	3JJX3442B
4.0	250	150	125	0.400	0.900	0.187	0.25	0.034	—	10	12	16	33	70	70	4JJX3818

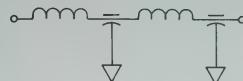
## CERAMIC EMI-RFI FILTERS

LL1 80dB/DECADE

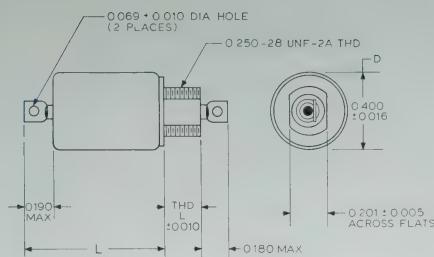


Dwg. No. A-14.276

LL2 80dB/DECADE



Dwg. No. A-14.277



Current Rating (A)	Voltage Rating		D (in.)	Max. L (in.)	Thd. L (in.)	Circuit	Min. Cap. (μF)	Max. R <sub>DC</sub> (Ω)	Minimum Insertion Loss at +25°C per MIL-STD-220							Sprague Part Number	
	85°C DC (V)	125°C DC (V)							30 kHz (dB)	75 kHz (dB)	100 kHz (dB)	150 kHz (dB)	1 MHz (dB)	10 MHz (dB)	100 MHz (dB)	1 GHz (dB)	
0.1	250	150	125	0.400	1.05	0.312	LL1	0.5	3.4	28	57	68	70	70	70	70	1JX3451
0.1	250	150	125	0.400	1.05	0.187	LL1	0.5	3.4	28	57	68	70	70	70	70	1JX3851
0.1	250	150	125	0.400	1.05	0.312	LL2	0.5	3.4	28	57	68	70	70	70	70	1JX3456
0.1	250	150	125	0.400	1.05	0.187	LL2	0.5	3.4	28	57	68	70	70	70	70	1JX3856
0.3	250	150	125	0.400	1.05	0.312	LL1	0.5	1.5	12	45	56	69	70	70	70	1JX3452
0.3	250	150	125	0.400	1.05	0.187	LL1	0.5	1.5	12	45	56	69	70	70	70	1JX3852
0.3	250	150	125	0.400	1.05	0.312	LL2	0.5	1.5	12	45	56	69	70	70	70	1JX3457
0.3	250	150	125	0.400	1.05	0.187	LL2	0.5	1.5	12	45	56	69	70	70	70	1JX3857
0.5	250	150	125	0.400	1.05	0.312	LL1	0.5	0.75	—	30	39	50	70	70	70	1JX3453
0.5	250	150	125	0.400	1.05	0.187	LL1	0.5	0.75	—	30	39	50	70	70	70	1JX3853
0.5	250	150	125	0.400	1.05	0.312	LL2	0.5	0.75	—	30	39	50	70	70	70	1JX3458
0.5	250	150	125	0.400	1.05	0.187	LL2	0.5	0.75	—	30	39	50	70	70	70	1JX3858
1.0	250	150	125	0.400	1.05	0.312	LL1	0.5	0.3	—	—	12	30	70	70	70	1JX3454
1.0	250	150	125	0.400	1.05	0.187	LL1	0.5	0.3	—	—	12	30	70	70	70	1JX3854
1.0	250	150	125	0.400	1.05	0.312	LL2	0.5	0.3	—	—	12	30	70	70	70	1JX3459
1.0	250	150	125	0.400	1.05	0.187	LL2	0.5	0.3	—	—	12	30	70	70	70	1JX3859
2.0	250	150	125	0.400	1.05	0.312	LL1	0.5	0.13	—	—	8.0	17	70	70	70	2JX3455
2.0	250	150	125	0.400	1.05	0.187	LL1	0.5	0.13	—	—	8.0	17	70	70	70	2JX3855
2.0	250	150	125	0.400	1.05	0.312	LL2	0.5	0.13	—	—	8.0	17	70	70	70	2JX3460
2.0	250	150	125	0.400	1.05	0.187	LL2	0.5	0.13	—	—	8.0	17	70	70	70	2JX3860

# CROSS REFERENCE

## MIL-F-15733

## MIL-TO-SPRAGUE

MIL-F-15733	SPRAGUE	MIL-F-15733	SPRAGUE	MIL-F-15733	SPRAGUE
/23-0001	1JX2203A	/23-0046	1JX2640A	/26-0011	1JX3757A2
/23-0002	1JX2603A1	/23-0047	1JX2320A6	/26-0012	2JX3843A
/23-0003	1JX2208A	/23-0048	1JX2720A3	/26-0013	1JX3209A3
/23-0004	1JX2608A	/23-0049	2JX2243A2	/26-0014	1JX3388A2
/23-0005	1JX2303A	/23-0050	2JX2643A3	/26-0015	1JX3204A2
/23-0006	1JX2703A3	/23-0051	2JX2248A3	/26-0016	3JX3212A4
/23-0007	1JX2205A	/23-0052	2JX2648A6	/26-0017	3JX3359A2
/23-0008	1JX2605A	/23-0053	2JX2323A4	/26-0018	3JX3222A1
/23-0009	1JX2210A	/23-0054	2JX2723A9	/26-0019	5JX3213A3
/23-0010	1JX2610A	/23-0055	2JX2245A	/26-0020	4JX3465A
/23-0011	1JX2305A1	/23-0056	2JX2645A	/26-0021	5JX3360A2
/23-0012	1JX2705A1	/23-0057	2JX2250A	/26-0022	5JX3223A4
/23-0013	1JX2213A4	/23-0058	2JX2650A1	/26-0023	1JX3357A2
/23-0014	1JX2613A1	/23-0059	2JX2325A	/26-0024	2JX3450A
/23-0015	1JX2218A2	/23-0060	2JX2725A1	/34-0003	2JX2723A23
/23-0016	1JX2618A2	/24-0001	1JX2655E2	/34-0004	5JX3355A1
/23-0017	1JX2308A	/24-0002	1JX2255E2	/34-0005	10JX3336A1
/23-0018	1JX2708A2	/24-0003	1JX6062B2	/34-0006	2JX3334A
/23-0019	1JX2215A	/24-0004	1JX6064B2	/34-0007	10JX6043A1
/23-0020	1JX2615A	/24-0005	10JX2548A2	/34-0008	1JX2655E10
/23-0021	1JX2220A	/24-0006	10JX2112A2	/34-0009	5JX2782A1
/23-0022	1JX2620A	/24-0007	10JX2554B1	/34-0010	2JX3205A4
/23-0023	1JX2310A1	/24-0008	10JX2115B1	/34-0011	10JX3254B1
/23-0024	1JX2710A1	/24-0010	1JX2652E1	/34-0013	10JX3240A5
/23-0025	1JX2223A2	/24-0011	1JX2655E1	/34-0014	5JX2330A6
/23-0026	1JX2623A4	/24-0012	1JX2655E3	/34-0015	3JX3212A2
/23-0027	1JX2228A1	/24-0014	1JX2252E1	/34-0016	3JX3621B1
/23-0028	1JX2628A1	/24-0015	1JX2255E1	/34-0017	10JX6026B2
/23-0029	1JX2313A2	/24-0016	1JX2255E3	/34-0018	1JX6090B1
/23-0030	1JX2713A4	/24-0018	1JX6061B1	/34-0019	3JX3308A6
/23-0031	1JX2225A	/24-0019	1JX6062B1	/34-0020	3JX3252B1
/23-0032	1JX2625A	/24-0020	1JX6062B3	/34-0021	5JX3253B1
/23-0033	1JX2230A	/24-0022	1JX6063B1	/34-0023	1JX2776A1
/23-0034	1JX2630A	/24-0023	1JX6064B1	/34-0024	1JX2777A1
/23-0035	1JX2315A	/24-0024	1JX6064B3	/34-0025	1JX2778A1
/23-0036	1JX2715A	/26-0001	1JX3609A5	/34-0026	2JX2779A1
/23-0037	1JX2233A3	/26-0002	1JX3758A2	/34-0027	3JX2780A1
/23-0038	1JX2633A	/26-0003	1JX3604A3	/34-0028	10JX2781A1
/23-0039	1JX2238A4	/26-0004	3JX3613A2	/34-0029	2JX3251B1
/23-0040	1JX2638A4	/26-0005	3JX3759A2	/34-0030	5JX3614A1
/23-0041	1JX2318A5	/26-0006	3JX3623A2	/49-0001	15JX2546A1
/23-0042	1JX2718A6	/26-0007	5JX3613A3	/49-0006	15JX6409A1
/23-0043	1JX2235A	/26-0008	4JX3844A	/49-0007	15JX6411A
/23-0044	1JX2635A	/26-0009	5JX3760A2	/57-0001	1JX3603A5
/23-0045	1JX2240A	/26-0010	5JX3623A3		

\* = NO SPRAGUE P/N, QUALIFICATION IN PROCESS

**MIL-F-15733**  
**SPRAGUE-TO-MIL**

SPRAGUE	MIL-F-15733	SPRAGUE	MIL-F-15733	SPRAGUE	MIL-F-15733
1JX2203A	/23-0001	1JX2655E1	/24-0011	2JX3334A	/34-0006
1JX2205A	/23-0007	1JX2655E10	/34-0008	3JX2780A1	/34-0027
1JX2208A	/23-0003	1JX2655E2	/24-0001	3JX3212A2	/34-0015
1JX2210A	/23-0009	1JX2655E3	/24-0012	3JX3212A4	/26-0016
1JX2213A4	/23-0013	1JX2703A3	/23-0006	3JX3222A1	/26-0018
1JX2215A	/23-0019	1JX2705A1	/23-0012	3JX3252B1	/34-0020
1JX2218A2	/23-0015	1JX2708A2	/23-0018	3JX3308A6	/34-0019
1JX2220A	/23-0021	1JX2710A1	/23-0024	3JX3613A2	/26-0004
1JX2223A2	/23-0025	1JX2713A4	/23-0030	3JX3621B1	/34-0016
1JX2225A	/23-0031	1JX2715A	/23-0036	3JX3623A2	/26-0006
1JX2228A1	/23-0027	1JX2718A6	/23-0042	5JX2330A6	/34-0014
1JX230A	/23-0033	1JX2720A3	/23-0048	5JX2782A1	/34-0009
1JX2233A3	/23-0037	1JX2776A1	/34-0023	5JX3213A3	/26-0019
1JX2235A	/23-0043	1JX2777A1	/34-0024	5JX3223A4	/26-0022
1JX2238A4	/23-0039	1JX2778A1	/34-0025	5JX3253B1	/34-0021
1JX2240A	/23-0045	1JX3204A2	/26-0015	5JX3335A1	/34-0004
1JX2252E1	/23-0014	1JX3209A3	/26-0013	5JX3613A3	/26-0007
1JX2255E1	/23-0015	1JX3603A5	/57-0001	5JX3614A1	/34-0030
1JX2255E2	/23-0002	1JX3604A3	/26-0003	5JX3623A3	/26-0010
1JX2255E3	/23-0016	1JX3609A5	/26-0001	10JX2112A2	/24-0006
1JX2303A	/23-0005	1JX6061B1	/24-0018	10JX2115B1	/24-0008
1JX2305A1	/23-0011	1JX6062B1	/24-0019	10JX2548A2	/24-0005
1JX2308A	/23-0017	1JX6062B2	/24-0003	10JX2554B1	/24-0007
1JX2310A1	/23-0023	1JX6062B3	/24-0020	10JX2781A1	/34-0028
1JX2313A2	/23-0029	1JX6063B1	/24-0022	10JX3240A5	/34-0013
1JX2315A	/23-0035	1JX6064B1	/24-0023	10JX3254B1	/34-0011
1JX2318A5	/23-0041	1JX6064B2	/24-0004	10JX3336A1	/34-0005
1JX2320A6	/23-0047	1JX6064B3	/24-0024	10JX6026B2	/34-0017
1JX2603A1	/23-0002	1JX6090B1	/34-0018	10JX6043A1	/34-0007
1JX2605A	/23-0008	2JX2243A2	/23-0049	15JX2546A1	/49-0001
1JX2608A	/23-0004	2JX2245A	/23-0055	15JX6409A1	/49-0006
1JX2610A	/23-0010	2JX2248A3	/23-0051	15JX6411A	/49-0007
1JX2613A1	/23-0014	2JX2250A	/23-0057	3JX3359A2	/26-0017
1JX2615A	/23-0020	2JX2323A4	/23-0053	2JX3843A	/26-0012
1JX2618A2	/23-0016	2JX2325A	/23-0059	1JX3757A2	/26-0011
1JX2620A	/23-0022	2JX2643A3	/23-0050	1JX3357A2	/26-0023
1JX2623A4	/23-0026	2JX2645A	/23-0056	5JX3760A2	/26-0009
1JX2625A	/23-0032	2JX2648A6	/23-0052	4JX3465A	/26-0020
1JX2628A1	/23-0028	2JX2650A1	/23-0058	4JX3844A	/26-0008
1JX2630A	/23-0034	2JX2723A23	/34-0003	2JX3450A	/26-0024
1JX2633A	/23-0038	2JX2723A9	/23-0054	1JX3388A2	/26-0014
1JX2635A	/23-0044	2JX2725A1	/23-0060	5JX3360A2	/26-0021
1JX2638A4	/23-0040	2JX2779A1	/34-0026	3JX3759A2	/26-0005
1JX2640A	/23-0046	2JX3205A4	/34-0010	1JX3758A2	/26-0002
1JX2652E1	/23-0010	2JX3251B1	/34-0029		

\* = NO SPRAGUE P/N, QUALIFICATION IN PROCESS

# MIL-F-28861

## MIL-TO-SPRAGUE

MIL-F-28861	SPRAGUE	MIL-F-28861	SPRAGUE	MIL-F-28861	SPRAGUE
/1-001	600JX2601B	/3-004	600JX2616B	/4-015	600JX2715B
/1-002	600JX2501B	/3-005	600JX2617B	/4-016	600JX2636B
/1-003	600KX2602B	/3-006	600JX2706B	/4-017	600JX2637B
/1-004	600JX2502B	/3-007	600JX2618B	/4-018	600JX2716B
/1-005	600JX2603B	/3-008	600JX2619B	/4-019	600JX2226B
/1-006	600JX2503B	/3-009	600JX2707B	/4-020	600JX2227B
/1-007	600JX2604B	/3-010	600JX2620B	/4-021	600JX2311B
/1-008	600JX2504B	/3-011	600JX2621B	/4-022	600JX2228B
/1-009	600JX2605B	/3-012	600JX2708B	/4-023	600JX2229B
/1-010	600JX2505B	/3-013	600JX2622B	/4-024	600JX2312B
/1-011	600JX2201B	/3-014	600JX2623B	/4-025	600JX2230B
/1-012	600JX2101B	/3-015	600JX2709B	/4-026	600JX2231B
/1-013	600JX2202B	/3-016	600JX2624B	/4-027	600JX2313B
/1-014	600JX2102B	/3-017	600JX2625B	/4-028	600JX2232B
/1-015	600JX2203B	/3-018	600JX2710B	/4-029	600JX2233B
/1-016	600JX2103B	/3-019	600JX2214B	/4-030	600JX2314B
/1-017	600JX2204B	/3-020	600JX2215B	/4-031	600JX2234B
/1-018	600JX2104B	/3-021	600JX2305B	/4-032	600JX2235B
/1-019	600JX2205B	/3-022	600JX2216B	/4-033	600JX2315B
/1-020	600JX2105B	/3-023	600JX2217B	/4-034	600JX2236B
/2-001	600JX2606B	/3-024	600JX2306B	/4-035	600JX2237B
/2-002	600JX2607B	/3-025	600JX2218B	/4-036	600JX2316B
/2-003	600JX2701B	/3-026	600JX2219B	/5-001	600JX3601B
/2-004	600JX2608B	/3-027	600JX2307B	/5-002	600JX3602B
/2-005	600JX2609B	/3-028	600JX2220B	/5-003	600JX3701B
/2-006	600JX2702B	/3-029	600JX2221B	/5-004	600JX3603B
/2-007	600JX2610B	/3-030	600JX2308B	/5-005	600JX3604B
/2-008	600JX2611B	/3-031	600JX2222B	/5-006	600JX3702B
/2-009	600JX2703B	/3-032	600JX2223B	/5-007	600JX3605B
/2-010	600JX2612B	/3-033	600JX2309B	/5-008	600JX3606B
/2-011	600JX2613B	/3-034	600JX2224B	/5-009	600JX3703B
/2-012	600JX2704B	/3-035	600JX2225B	/5-010	600JX3607B
/2-013	600JX2206B	/3-036	600JX2310B	/5-011	600JX3608B
/2-014	600JX2207B	/4-001	600JX2626B	/5-012	600JX3704B
/2-015	600JX2301B	/4-002	600JX2627B	/5-013	600JX3201B
/2-016	600JX2208B	/4-003	600JX2711B	/5-014	600JX3202B
/2-017	600JX2209B	/4-004	600JX2628B	/5-015	600JX3301B
/2-018	600JX2302B	/4-005	600JX2629B	/5-016	600JX3203B
/2-019	600JX2210B	/4-006	600JX2712B	/5-017	600JX3204B
/2-020	600JX2211B	/4-007	600JX2630B	/5-018	600JX3302B
/2-021	600JX2303B	/4-008	600JX2631B	/5-019	600JX3205B
/2-022	600JX2212B	/4-009	600JX2713B	/5-020	600JX3206B
/2-023	600JX2213B	/4-010	600JX2632B	/5-021	600JX3303B
/2-024	600JX2304B	/4-011	600JX2633B	/5-022	600JX3207B
/3-001	600JX2614B	/4-012	600JX2714B	/5-023	600JX3208B
/3-002	600JX2615B	/4-013	600JX2634B	/5-024	600JX3304B
/3-003	600JX2705B	/4-014	600JX2635B		

Please refer to Mil-Spec MIL-F-28861 (general) for further information.

# MIL-F-28861

## SPRAGUE-TO-MIL

SPRAGUE	MIL-F-28861	SPRAGUE	MIL-F-28861	SPRAGUE	MIL-F-28861
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600JX2102B	/1-014	600JX2307B	/3-027	600JX2633B	/4-011
600JX2103B	/1-016	600JX2308B	/3-030	600JX2634B	/4-013
600JX2104B	/1-018	600JX2309B	/3-033	600JX2635B	/4-014
600JX2105B	/1-020	600JX2310B	/3-036	600JX2636B	/4-016
600JX2201B	/1-011	600JX2311B	/4-021	600JX2637B	/4-017
600JX2202B	/1-013	600JX2312B	/4-024	600JX2701B	/2-003
600JX2203B	/1-015	600JX2313B	/4-027	600JX2702B	/2-006
600JX2204B	/1-017	600JX2314B	/4-030	600JX2703B	/2-009
600JX2205B	/1-019	600JX2315B	/4-033	600JX2704B	/2-012
600JX2206B	/2-013	600JX2316B	/4-036	600JX2705B	/3-003
600JX2207B	/2-014	600JX2501B	/1-002	600JX2706B	/3-006
600JX2208B	/2-016	600JX2502B	/1-004	600JX2707B	/3-009
600JX2209B	/2-017	600JX2503B	/1-006	600JX2708B	/3-012
600JX2210B	/2-019	600JX2504B	/1-008	600JX2709B	/3-015
600JX2211B	/2-020	600JX2505B	/1-010	600JX2710B	/3-018
600JX2212B	/2-022	600JX2601B	/1-001	600JX2711B	/4-003
600JX2213B	/2-023	600JX2602B	/1-003	600JX2712B	/4-006
600JX2214B	/3-019	600JX2603B	/1-005	600JX2713B	/4-009
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600JX2216B	/3-022	600JX2605B	/1-009	600JX2715B	/4-015
600JX2217B	/3-023	600JX2606B	/2-001	600JX2716B	/4-018
600JX2218B	/3-025	600JX2607B	/2-002	600JX3201B	/5-013
600JX2219B	/3-026	600JX2608B	/2-004	600JX3202B	/5-014
600JX2220B	/3-028	600JX2609B	/2-005	600JX3203B	/5-016
600JX2221B	/3-029	600JX2610B	/2-007	600JX3204B	/5-017
600JX2222B	/3-031	600JX2611B	/2-008	600JX3205B	/5-019
600JX2223B	/3-032	600JX2612B	/2-010	600JX3206B	/5-020
600JX2224B	/3-034	600JX2613B	/2-011	600JX3207B	/5-022
600JX2225B	/3-035	600JX2614B	/3-001	600JX3208B	/5-023
600JX2226B	/4-019	600JX2615B	/3-002	600JX3301B	/5-015
600JX2227B	/4-020	600JX2616B	/3-004	600JX3302B	/5-018
600JX2228B	/4-022	600JX2617B	/3-005	600JX3303B	/5-021
600JX2229B	/4-023	600JX2618B	/3-007	600JX3304B	/5-024
600JX2230B	/4-025	600JX2619B	/3-008	600JX3601B	/5-001
600JX2231B	/4-026	600JX2620B	/3-010	600JX3602B	/5-002
600JX2232B	/4-028	600JX2621B	/3-011	600JX3603B	/5-004
600JX2233B	/4-029	600JX2622B	/3-013	600JX3604B	/5-005
600JX2234B	/4-031	600JX2623B	/3-014	600JX3605B	/5-007
600JX2235B	/4-032	600JX2624B	/3-016	600JX3606B	/5-008
600JX2236B	/4-034	600JX2625B	/3-017	600JX3607B	/5-010
600JX2237B	/4-035	600JX2626B	/4-001	600JX3608B	/5-011
600JX2301B	/2-015	600JX2627B	/4-002	600JX3701B	/5-003
600JX2302B	/2-018	600JX2628B	/4-004	600JX3702B	/5-006
600JX2303B	/2-021	600JX2629B	/4-005	600JX3703B	/5-009
600JX2304B	/2-024	600JX2630B	/4-007	600JX3704B	/5-012
600JX2305B	/3-021	600JX2631B	/4-008		

In the construction of the components described, the full intent of the specification will be met. The Sprague Electric Company, however, reserves the right to make, from time to time, such departures from the detail specifications as may be required to permit improvements in the design of its products. Components made under military approvals will be in accordance with the approval requirements.

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